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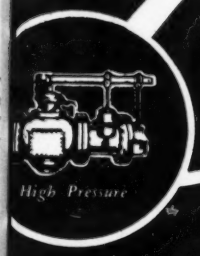

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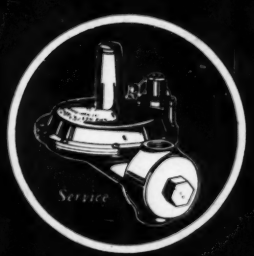

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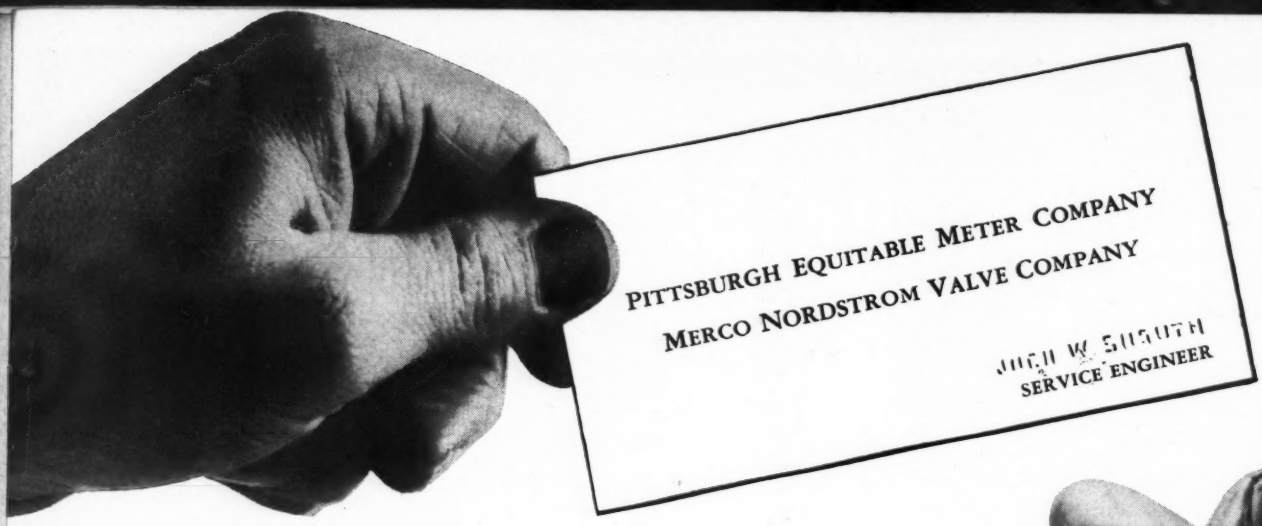

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Of course, a great number of our products are necessary and vital to the successful pursuit of the war. Other lines have been discontinued entirely for the duration. Selling, as such, is virtually a thing of the past, but engineering and technical assistance, particularly in maintenance and installation work, is very important. We have retained our entire staff, which has been carefully built over the years, to bring those in the field the maximum knowledge and experience in measurement and control.

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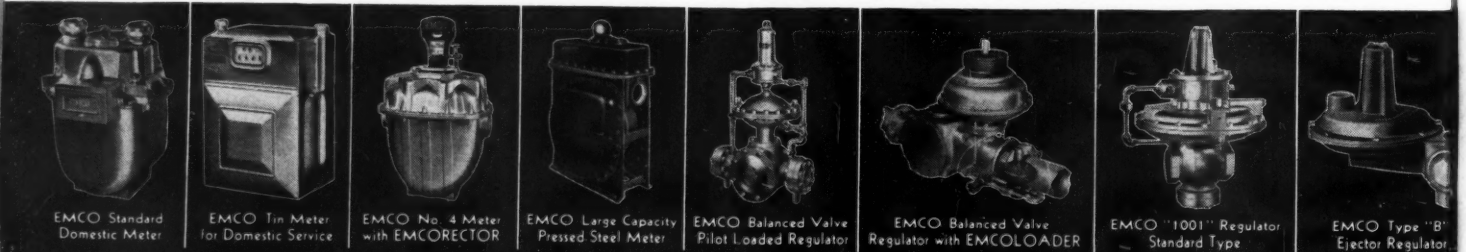

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Twentieth Year of Publication

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Publication Office: **LOS ANGELES 14, California, 1709 West Eighth Street, DRexel 4337.**
Branches: **DALLAS 5, Texas, 3645 Haynie Avenue, Justin 8-1764. CHICAGO 9, Illinois, 1064 Peoples Gas Building, HARrison 6634. WASHINGTON: Editorial Office, 850 Munsey Building, Phone District 2118. NEW YORK, 420 Lexington Avenue; LEXington 2-4816.**

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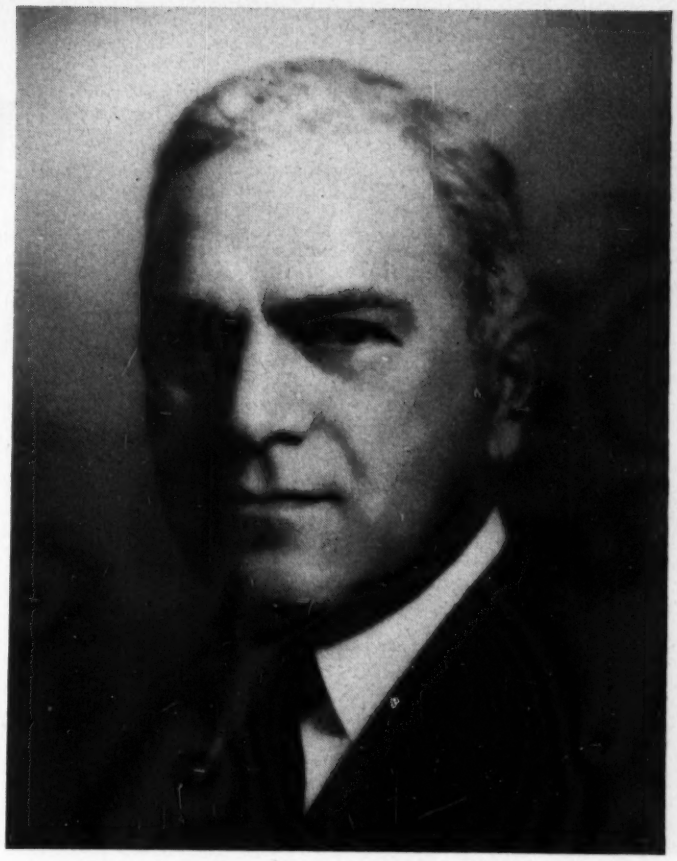
February, 1944. Volume XX, Number 2. G A S is published monthly by Western Business Papers, Inc., 1709 West Eighth Street, Suite 320, Los Angeles 14, California. Subscription price: 25 cents the copy; two years for $3; $2 per year; Canada, $3 per year. Entered as second-class matter August 20, 1936, at the post office at Los Angeles 14, Calif., under the Act of March 3, 1879. Member: Audit Bureau of Circulation; Associated Business Papers, Inc. Publishers: BUTANE-PROPANE News; Handbook BUTANE-PROPANE GASES; WESTERN METALS.

GUEST EDITORIAL



Competition

Our War of the Future

By CLIFFORD E. PAIGE

President and Chairman of the Board
Brooklyn Union Gas Company

THIS year will be better than last—we face forward. The war problems are better clarified. We have demonstrated that we can take a beating. We have made it very clear that we can provide one. To an astonishing degree, we have improved our production and especially our distribution. Little is said nowadays about "too little and too late."

Bickerings and differences at home are sad and bring to mind General Eisenhower's observation to the effect that the boys over there are all right; it's the behavior of the folks at home which worries them.

GAS is a trade paper, and thus is for the people interested in the industry it represents, for which it is a medium of information. It is concerned with what is good or bad for our people.

One of the happiest recoveries now apparent is a recovery from post-war hysteria. Somehow so many people seem to regard post-war planning as something approaching the millenium. The treatment proposed in the earlier days sounded somewhat like that advocated by the enthusiasts for Technocracy. We have come to realize we don't really mean post-war so much as we mean planning for the future and being restrained only by exigency, whether it be war or some other malign device.

The performance of our industry and the people in it has made us proud of our association, whether the field be in natural or in manufactured gas. We contribute materially to the war effort, but always we have kept our remaining reserve operating efficiently in the direction of the future of our utility business.

The end of international hostilities may mean the end of the war to some, but to many it will mean a continuation of war of a different character, broadly termed competition. It is in the field of competition that our future lies. We have seen great transitions in our business, and doubtless we shall see more. No one will deny that we are better equipped for anything the future may bring than we ever have been before.

We have no magic. We have limited romance in our business. But we have proven the will to do.

"Battles are won in the hearts of men." We may look forward to success in our engagements in direct proportion to the wisdom, energy and enthusiasm which we invest in them.

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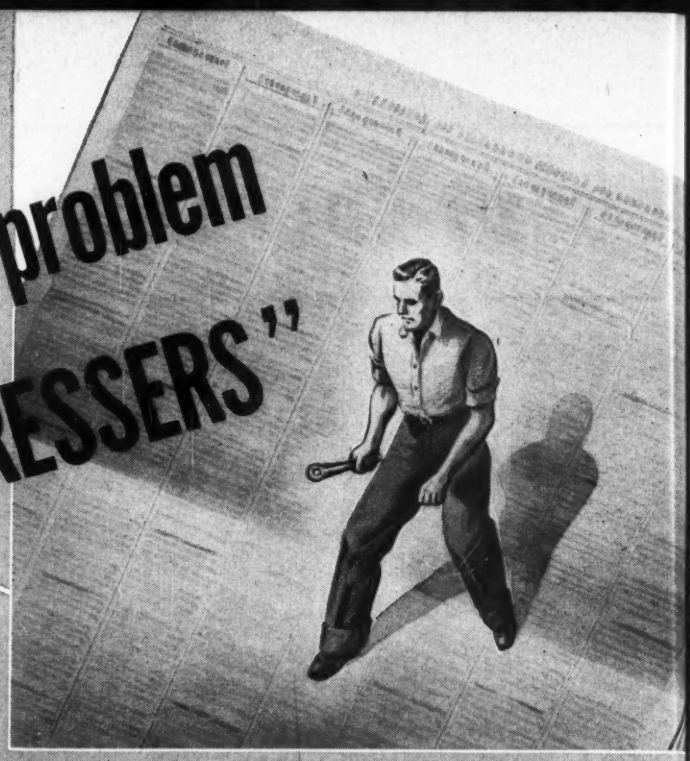

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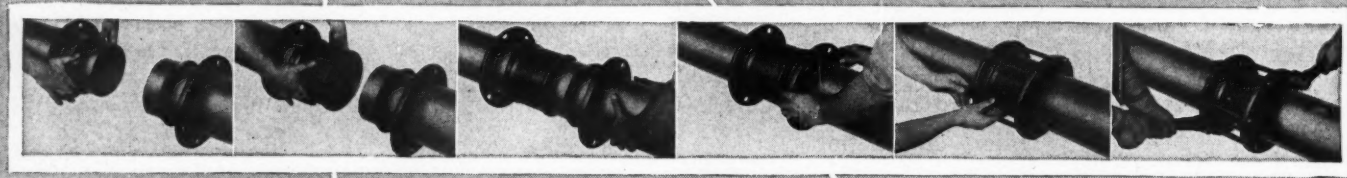

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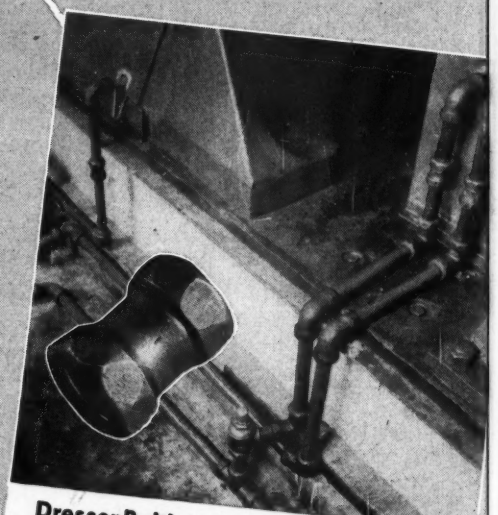

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Thermally Thinking

By ELLIOTT TAYLOR, Washington Editor

Hope

THE omniscent legal mind, operating with the throttle wide open, has finally reached its conclusions in the matter of the Federal Power Commission vs. the Hope Natural Gas Co.; and a case first filed five years ago is decided in favor of the FPC and against the natural gas company.

We assume that all of our readers whose interest will be vitally affected have summoned up the profound patience required to read the full text of the decision and are now aware of the newly enunciated doctrine that in rate making the end justifies the means, and that it makes little difference how regulatory bodies arrive at rates, so long as those rates are fair and reasonable.

Acutely conscious of our own limitations in the field of legalistic thinking, we leave to the attorneys the lively discussions now under way on the matter of confusing legal ethics with social good; and since we are not privy to the ponderous private calculations of the august justices, we will not attempt to analyze the processes of reasoning that led to their several conclusions.

If the gloating prose of Mr. Leland Olds, FPC chairman, can be taken as an honest appraisal, then the decision "marks the beginning of a new era" in utility regulation, gives complete judicial approval of the prudent investment principle of the commission and sees the old fair value theory "quietly laid to rest." But since Mr. Chairman Olds is inclined to leap into print with a tiny opinion on any subject, his professionally progressive enthusiasms must often be liberally discounted.

Commentators of a more conservative turn of mind, on the other hand, have asserted that the supreme court is "in favor of letting federal . . . agencies fix rates on any basis they choose or on no basis at all . . .," that it has abandoned its traditional function of interpreting the laws, and that it is "bound in the direction of a perfunctory supervisory tribunal."

Adding to the existing confusion, Justices Black and Murphy took occasion in rendering their separate although concurring opinions to record a stuffy, but no doubt legally devastating, criticism at their brother, Justice Frankfurther, for making what they termed "a wholy gratuitous assertion as to constitutional law."

It seems to be a major tenet of the legal mind that the sum total of all desirable attainment can be measured by the degree to which that attainment can be reconciled to historical precedent; and the older the precedent the more lawyers pretend at least to respect it. Like Camembert cheese it seems to ripen and improve with age. But as it ripens the outer rind grows harder and more impervious to change until eventually, we suppose, it just dries up completely and blows away.

We would not deny the right and privilege of those who are steeped in legal lore to question the technical soundness of the Hope decision. Nor would we stay if we could the stern ardor of the editorial pens that stoutly deny its probity and justice.

> **But after the post mortem has been painstakingly and painfully concluded, and after every lay and legal opinion has been heard, what then? When confronted by a fait accompli the prudent man proceeds to reconcile his course with the realities of the situation and plan his future operations accordingly. The departure of the court from historic tradition may be both interesting and significant from the legal point of view, but it is the present and the future impact that most concern natural gas men. Growing out of the decision, and quite apart from its legal aspects, we recognize certain basic assumptions that we believe must henceforth be reckoned with.**
>
> **The first of these is that the principle of pragmatism —the acceptance of the doctrine that the validity of any concept or idea is proven so long as it works—will be the acid test in future rate-making controversies. There are, it is true, other and higher rules of order than that; but today is a day when those rules are temporarily in disuse and largely in disrepute. We would consider it naive on our part to feign indignation, or even to feel surprise at the fact that the principle finds formal enunciation in a supreme court decision. A whole world at war stands as a stark and bloody monument to its acceptance.**
>
> **The second fact is that the delivery of wanted goods and services takes precedent over any other reason or excuse for the very existence of public utilities. The investor's rights, the banker's interest and the lawyer's interpretation of the constitutional safeguards that protect them are no longer matters of transcendent concern as far as the courts are concerned. And we are convinced that any rate changes of the future will be examined first of all in the light of their possible immediate effect on the ability of the gas company to continue rendering unimpaired service.**

There is no denying that the Hope decision immeasurably strengthens the hand of all utility regulation. Only in exceptional and glaring cases of commission abuse or error would their regulations be subject to review by the court; and such review, even if granted, would throw all of the burden of proof that an order was unreasonable on the utility. While we do not believe that this was meant to close the doors of the courts to utilities with legitimate appeals, the net result will unquestionably be to make most appeals both undesirable and unproductive from the company standpoint.

Except where interstate operations are concerned, utilities will now find themselves more than ever in the exclusive hands of their state regulatory commissions. These bodies, continuing to operate within the framework of state laws, and under the interpretations of their own state courts, will continue to have jurisdiction over intrastate operations. Thus in a new sense and in a large measure, an era of home rule in gas industry regulation is upon us. The final effect of this new absolutism will depend on the integrity and fair-mindedness of the state commissions as well as on the ability of the utilities to cooperate and to compromise where the necessity for such action is indicated.

Certainly in times past we have seen rate cases plodding their interminable paths through the courts, when they were destined from the outset to be lost causes. We have seen appeals made that could and should have been settled in quiet compromise. We are disposed even to question whether the sum total of all the legal battles won has been enough to compensate for the losses, tangible and intangible, that have been suffered in the process.

Many seasoned and experienced operators of natural gas properties have long held to the principle that compromise with regulation is the easiest and shortest path to rates that are fair to company and consumer alike.

While the newest supreme court decision will in all probability be distasteful, and perhaps even shocking to those who have long worshipped at the sacred shrine of Smyth vs. Ames, we believe that for better or for worse it is in keeping with the new spirit of the times. It is well to remember that even the personnel of the present supreme court is a phenomenon growing out of mounting restlessness and dissatisfaction with the conservative views of its predecessors. And it is no mere accident that the minority opinions of a decade ago have grown into the majority decisions of today.

The strength and prestige of the natural gas industry do not stem from the legalistic incantations that have from time to time been mumbled in its behalf. Its justification rests secure in the simple and understandable fact that over the years it has delivered, to American homes and to American industry, an indispensable service at a price that its consumers are willing and able to pay.

We are confident that no court, no commission, and no company can for long pursue with impunity a course that might imperil fulfillment of this, the industry's appointed function.

Janus

HAVING been painstakingly educated by our own national propaganda mill to regard our British cousins as God's finest repository (outside our own borders) of all that is noble and honorable and true in human nature, we are pleased to record here the evidence of another rare and priceless attribute, the capacity for self-criticism.

Our esteemed contemporary, "Janus," writing in the *GAS Times*, London, addressing himself to the subject of complacency and caution in the English gas industry, has this to say:

> Truth to tell—and it may as well be told in part, otherwise we shall never get anywhere—the set-up of the gas industry is all wrong. At the center is a mere handful of people . . . who dictate policy . . . Outside that select band we have all sorts of men, technical and commercial, straining at the leash to get on with the job of making gas service universal . . . There is far too much of "you must not do that or it might offend somebody," or "You cannot do that, it might take two shillings off our net revenue," to be good . . . Truth to tell . . . we have too many duds in the industry . . . We are the best compilers of words to show how good we are; but when it comes to action we are not even starters. This is directed to the gas supply side; the makers of equipment and appliances are there all the time and ready and willing to go far ahead of demand; but they just have to trail along at the coattails of their customers—the gas undertakings. What we need is less fear and more imagination and a bold policy—it sounds simple; but it is hard going.

The oldest of the Gods in Roman mythology, Janus alone was equipped with two faces, one in back for surveying the field, and the other in front for looking ahead. While we have at times admitted the convenience of this unique capacity, we are none the less constrained to be unenvious. For were we able simultaneously to look back at the mistakes of the gas industry and forward at its unfulfilled possibilities we might feel constrained, in editorial candor, to say "we have too many duds in the industry . . . what we need is less fear and more imagination."

An observation which within the present limited sweep of our vision would, of course, be unwarranted.

Two Per Cent

Over two hundred representatives of concerns manufacturing cooking, heating, water heating, refrigeration and air conditioning equipment and appliances have joined voices after a meeting in Cincinnati late in January to protest the policies laid down in the Vinson price-profit directive released by the OWI in December.

The Vinson directive is an economic carryall designed to get some plants or portions of plants back into the production of durable consumer goods with little or no increase in costs of those goods to the ultimate consumer. The sticking point as far as the manufacturers are concerned is the avowed intention of the Economic Stabilizer, operating in conjunction with WPB and OPA, to restrict manufacturers to price increases that will yield a maximum profit of 2% over unit production costs, in some instances, and to force them to sell goods at cost of production in others.

The producers who will be permitted 2% are those whose current profits from all operations are no more than double those earned during the 1936-39 base period; and those who are expected to produce and sell at cost of production are the firms whose profits from all operations are more than double those earned in that base period.

This is a new variation of the consumer subsidy idea, for obviously the extra profits from current operations are almost all coming from war contracts. So Mr. Vinson sees no reason why part of the cost that the government pays for a bomb sight shouldn't be used to cut the price of Mrs. Zilch's two-burner cooker made in the same plant.

The incentive to industry to get going under the new scheme has been supplied by a combination appeal to patriotism and threat of force. Thus the directive asserts that: "There exists a patriotic responsibility on the part of all manufacturers of consumer goods to produce utilitarian, durable products at a cost which the average consumer is able to pay;" and where the supply of essential consumer goods is threatened, "WPB must indicate that it has prepared and is ready to carry through a production program with its full legal authority."

> **We are of the opinion that in its raw and unmodified form the scheme will be a failure. In the first place the appeal to patriotism lacks conviction; the OES notwithstanding, we question whether many manufacturers will feel it their duty to lose money on a line of civilian merchandise while others are coining it hand over fist in war production. And parenthetically we might offer the suggestion that if some of the Washington agencies would just set the flag back in its standard for a few minutes and pick up the scales of justice, or even the lamp of reason, their observations might be more convincing. Financially the formula provides little incentive for the reconversion of plants either wholly or in part to civilian production, since management would not be able to justify the risk or recover the expense of such reconversion.**

The letter of the law, if invoked by WPB, will no doubt be observed; but there is a wide spread between compliance and cooperation that even "the full legal authority" of that agency cannot bridge. A laggard and resentful gesture of obedience to the law is no substitute for an enlightened and enterprising operation within the law. Until manufacturers can adjust their net prices to present day conditions, with an adequate margin of safety for the risks involved, the production of durable consumer goods will remain a mere trickle even when a full flood is required.

What industry needs most of all right now is for government to take a little bit of the pressure from the foot on its neck.

When Appliances Come Back...

By MAXWELL M. FREEMAN

Secretary, Post War Planning Committee, National Retail Furniture Association

NRFA tells what five months of study revealed of furniture store thinking on post-war appliance merchandising. Reprinted from the February, 1944 issue of "National Furniture Review."

NO SINGLE phase of home goods merchandising has ever been discussed pro and con with so much vigor as the matter of major appliances in the furniture store. From the beginning there have been differences between manufacturer opinion and retailer opinion that have flared occasionally almost to the dignity of battle. Because manufacturer-dealer relations in the appliance branch of home goods have been most under discussion, the National Retail Furniture Association assigned its Post-War Planning Committee, for its first job, to find out in concrete, cross-sectional form, "what the trouble is."

For a 16-week period personal contacts with retailers have been made. We have learned what dealers think —about the past, and about the future. The "average opinion" of the furniture dealer has been found, and it will be submitted by the National Retail Furniture Association to all appliance manufacturers interested in learning such things about one of their best outlets as are set forth in this article. The personal-contact survey covered about 200 stores, in 27 states, verifying established ideas, and establishing a nation-wide thought pattern.

When appliances were available, did you find the sales and service policies of the manufacturers generally satisfactory?

The answer of 74.4% of the dealers to this question was "Yes." There were 25.6% who are dissatisfied with appliance manufacturers' sales and service policies.

What were the unsatisfactory policies?

Listed in the order of the number of times mentioned, these were the "gripes:" (1) Too many retail outlets allowed to handle appliances without respect for their ability to pay for and service them. (2) A general displeasure with the guarantees placed on appliances by the manufacturer—especially on refrigerators. (3) Generally unsatisfactory over-all service policies. (4) Mark-up on appliances not sufficient to create ample sales incentive.

Dealers interviewed had suggestions for overcoming the complaints. They would prefer closer factory-dealer contact, with direct factory distribution. They want increased discounts, and a shortening of all lines with the resultant increased savings reflected in profit for the dealer.

How did furniture stores purchase appliances?

Car lot purchases of refrigerators were made by 40.5%; of washers by 29.8%; of gas ranges by 19%; of radios by 8.3%; of electric ranges by 5%. The survey showed that an increasing number of dealers had begun to purchase refrigerators in car lots just before Pearl Harbor, although this was not so common with other appliances.

How important is the appliance department in a furniture store?

First-floor displays were used in "appliance days" by 75.2% of the stores interviewed. This is significant, in that the location of a department in a store indicates the importance of the items sold in that department in relation to the importance of others. In addition, 77.7% said that they plan to improve their appliance display and layout after the war.

In connection with this latter group, there was an 80.2% desire for special help from manufacturers in creating appliance displays and department ideas. No store interviewed expressed an intention to devote less space to appliances; 57.5% said they will put more space in their post-war appliance departments, and the remainder will use the same space as before the war.

Who assumes the responsibility of servicing appliances?

Neither the size of the store nor the population of its community has any bearing on whether the dealer, manufacturer, distributor, or utility assumes responsibility. For the most part, owing to the kind of merchandise a furniture dealer sells, he feels that it is his duty to assume full responsibility for his customers' satisfaction after sales are made, regardless of the warranty of the manufacturer, either direct or through a distributor. This, no doubt, explains the percentage relationship reported in Table 1.

How do dealers like past guarantee policies, and what do they want after the war?

There are indications that dealers have been working under longer guar-

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"WHAT IS A FURNITURE STORE" is the inquiry made by Walter Kleeman, Jr., in a booklet just published by the National Retail Furniture Association. The author answers his own question by stating that the name "Furniture Store" is a misnomer and that the retail store, carrying this label, is actually a home goods store, carrying everything from door mats to wall brackets, and floor coverings, appliances and furniture—for its stocks include every essential item needed in the appointment of a home.

Approximately 70% of all home furnishings are sold in the furniture stores of the country, and as the purchasing agents for 95,000,000 persons, the 20,000 furniture stores dispose of more than a billion dollars in merchandise annually. Medium priced furniture is purchased by 80% of the customers, while 10% buy furnishings priced in the upper brackets and an equal percentage buy low priced home goods.

The buying habits of the public are well established; and merchants by following the pattern laid down by the customers can, with a fair degree of accuracy, build inventories to meet the sales peaks, Kleeman writes. The furniture merchant does one-third his annual sales volume during the months of May, August and December. Consider special items: Consumers buy their stoves in September, October and November. Gas ranges, on the other hand, reach selling peaks in the spring months.

Deferred payment sales constitute 78.5% of the total furniture store volume, the booklet discloses. Furniture merchants pioneered installment selling, and overcoming the natural pitfalls of liberal credit granting, developed it to the point where it is now one of the major factors in the expansion of the home goods business. While furniture store installment receivables reached a peak of $619,000,000 in 1941, the total now has been cut down to less than $270,000,000 because of federal credit restrictions.

TABLE 1. WHO ASSUMES RESPONSIBILITY OF SERVICING APPLIANCES?

	Dealers	*Manufacturers*	*Distributors*	*Utilities*
Refrigerators	72.7%	25.6%	1.7%	
Washers	82.6	17.4		
Radios	83.5	12.4	4.1	
Electric Ranges	53.7	13.2		5.7%
Gas Ranges	81.8	10.0		5.0
Cleaners	76.8	16.6		3.3

Dealers surveyed reported the above percentages of distribution in the responsibility in the servicing of appliances. Note that in most cases the dealers carried the servicing load.

TABLE 2. HOW DO DEALERS LIKE PAST GUARANTEES AND WHAT DO THEY WANT AFTER THE WAR?

	30-day	*60-day*	*90-day*	*6-mos.*	*1-year*	*5-year*	*Non-specific*
REFRIGERATORS							
Pre-war actual					7.3%	76.8%	
Post-war choice					61.2	24.8	
WASHERS							
Pre-war actual			2.5%		82.6		
Post-war choice			9.1	5.8%	78.5		
RADIOS							
Pre-war actual		1.7%	83.5				
Post-war choice	4.1%		85.2				
ELECTRIC RANGES							
Pre-war actual					80.7		
Post-war choice					85.6		
GAS RANGES							
Pre-war actual					12.8		85.5%
Post-war choice			5.8	13.2			80.2
CLEANERS							
Pre-war actual					78.6		
Post-war choice					78.5		

There was an almost evenly divided opinion on the matter of guarantees made by the store over and above those made by the supplier.

antee periods than they would like to see after the war. (See Table 2). Only about 7% of dealers gave a one-year guarantee on refrigerators, for example, but over 61% would prefer it to the five-year pre-war guarantee granted by nearly 77%. Only about 25% pick five-year guarantees as satisfactory for post-war merchandising of refrigerators. Several suggested more complete guarantee information on labels and tags.

On the question of whether retailers recommend moderate free service by the individual store after the expiration date of the factory guarantee, opinion was sharply divided, with 53.7% of those interviewed recommending against it.

What will be the post-war trade-in picture?

Only 18.2% said they do not plan to take trade-ins after the war; 72.7% expect a large trade-in market; and 24.8% expect to have either a special trade-in department or will offer standard allowances. Only 21.5% intend to enlarge service departments to recondition appliances taken in trade.

Will the furniture retailer maintain a complete service department after the war?

By cross analysis it was determined that in cities over 200,000 population, some manufacturers or distributors had a system of delivery and installation of appliances—particularly refrigerators—for dealers. Outside of the larger metropolitan areas, however, there was found to be no agreement between supplier and retailer for this. In other words, retailers handled their own problems. In the larger cities where deliveries *were* made by the supplier, 73.3% of the dealers found the arrangement satisfactory.

NRFA believed there is an excellent opportunity for big appliance manufacturers to help retailers work out a well-rounded but simplified procedure for the operation of repair and maintenance service, in view of interest in such departments. (Table 3.)

What has been the most satisfactory credit stretch on appliances?

The figures in Table 4 indicate rather clear-cut conclusions. For many years furniture dealers have financed all their own time-payment sales; only during the period after the depression did furniture dealers find it necessary to handle installment papers through commercial financing companies.

This accounts for the 79.3% of dealers who were self-financing before the war, and the 76.9% who say they will finance their own sales after the war Even if banks were to set up a satisfactory financing plan, 80.9% of the stores interviewed wouldn't be much interested in outside financing of installment sales. (This may be influenced by the good cash condition of all furniture stores during 1943.)

No basic change in installment sales policies for the post-war era were indicated by 98.4% of the dealers.

What will be the post-war attitude toward private brands?

Table 5 shows a declining interest in private brands. Because home goods are largely no-name products, furniture stores are among the pioneers in private brands, feeling that they would prefer to sell a washer or refrigerator or other appliance with a name exclusive to the store. Due mainly to servicing problems, private brands began to disappear from furniture stores in the years prior to the war.

Among the questions which would influence the post-war pro and con of private brands were, (1) what discounts would be available on the standard brands, (2) what selling features and terms would be offered by such private-brand merchandisers as mail order firms, and (3) what new competition would appear, offering what sort of appliances. More private-brand interest was shown in refrigerators than in radios and gas ranges; second in interest was the washing machine. Over 73% felt private brands were not necessary; over 66% of those who feel they may be necessary base their opinion on the need for lower price bracket merchandise.

Greater private-brand competition is expected after the war by 67.8% of those contacted, from stepped-up

TABLE 3: HOW MANY STORES HAVE OR PLAN COMPLETE SERVICE DEPARTMENTS?

	Before the War	*After the War*
Yes	39.7%	56.2%
No	60.3	33.9
Uncertain		9.9

Dealers indicated an increased interest in more scientific appliance selling.

mail and chain houses, and owing to increased private brand manufacturers—new names recruited from metal war production.

Do furniture stores want advertising allowances after the war?

Two out of three do, and 68.7% of those who do not would prefer that the advertising allowance be discontinued in favor of increased discounts. The furniture store is not a good user of direct-mail material supplied by manufacturers; only five out of eight surveyed stated a substantial interest in its continuation as far as they are concerned.

Will furniture stores hire more special appliance salesmen?

Before the war 35.5% of stores surveyed had special appliance men; 42.1% will have them after the war. About 41% said they do not plan appliance specialists after the war, and 16.6% were undecided at the time of the survey.

Retailers who intend to use special appliance salesmen list their advantages in this order; (1) maintain closer customer contact—45.1%; (2) produce plus-volume sales—32.4%; (3) increased new accounts—16.9%; (4) aided in beating competition—5.6%.

Listed disadvantages of special salesmen: (1) too costly—26.1%; (2) created ill will among customers—17.4%; (3) too difficult to control—15.2%; (4) made unkeepable promises—15.2%; (5) resulted in too many poor credit sales—10.9%; (6) made unreasonable trade-in allowances—6.5%; (7) preferred store traffic to outside contact—4.3%; (8) disrupted store hours—2.2%; (9) didn't increase volume—2.2%.

How much "push" will be put back of appliances after the war?

Nearly 63% said they would spend more time and effort on appliances. "About the same amount of effort" was the vote of 14.9%. Only 2.5% intend to merchandise less aggressively in the appliance department after the war, and 19.8% are as yet uncertain.

About 72% of dealers interviewed said they would set up and display a complete kitchen if the manufacturer gave them ideas and assistance.

Will furniture stores stock and promote electric sinks, frozen food storage units, and electric and/or gas automatic water heaters?

The only difficulties expected in the post-war merchandising of these appliance items were problems of installation. (See Table 6.)

TABLE 4. WHAT IS THE MOST SATISFACTORY LENGTH OF CREDIT STRETCH?

	6 *mos.*	12 *mos.*	15 *mos.*	18 *mos.*	24 *mos.*	36 *mos.*
Refrigerators		45.5%	1.7%	39.7%	11.5%	0.8%
Radios (console)		91.7		5.8	1.7	
Washers	0.8%	75.3		15.7	0.8	
Electric Ranges		77.3		18.2	4.5	
Gas Ranges		72.4		23.2	2.6	
Cleaners	7.3	72.1		8.3	2.5	

This table may be influenced by the current effects of regulation."

TABLE 5: ARE PRIVATE BRANDS NECESSARY?

	Yes	*No*
Refrigerators	8.3%	91.7%
Radios	5.8	94.2
Washers	7.4	92.6
Electric Ranges	0.8	99.2
Gas Ranges	7.4	92.6
Cleaners	1.6	98.4

Dealers surveyed voted this way about the necessity of private brands.

TABLE 6: WILL FURNITURE STORES SELL "NEW" APPLIANCE ITEMS?

	Yes	*No*	*Uncertain*
Electric Sinks	54.6%	38.0%	7.5%
Frozen Storage Units	79.3	17.4	3.3
Water Heaters	22.3	59.2	18.2

Here is the furniture store viewpoint on new load-building type appliances.

What are dealers planning to do to increase appliance volume?

Increased advertising and improved appliance display are leaders in methods planned for improving volume. (See Table 7.)

How many utilities have direct merchandising activities in the areas covered by the survey?

Consumers could buy appliances in 58.7% of the utilities in areas where appliances are sold by dealers interviewed. Just over 37% did not sell appliances.

Nearly 70% of dealers do not believe that appliances generally will require any promotional activity by public utilities after the war. Three out of 10 mentioned exceptions only in the case of electric ranges, ironers, dishwashers, deep freezers, and vent fans.

Queried about the respective jobs of the utility and the furniture store selling appliances after the war, dealers said that utilities should sell major load-building appliances only, principally those not now considered over-the-counter merchandise. Dealers would like to see utility-dealer cooperative advertising, maintenance of price standards, elimination of high competition salesmanship, and compensation by the utilities for their salesman on a basis of load-building volume rather than dollar volume.

The dealer could, in turn, cooperate with utility promotions, sell better quality appliances, and stock and sell all load-building appliances.

TABLE 7: HOW WILL DEALERS GO AFTER MORE POST-WAR BUSINESS?

Increased advertising	45.2%
Better appliance displays	23.4
Greater overall aggressiveness	7.3
Maintain an outsides sales force	6.5
Will do nothing different	5.6
Will concentrate on contacting old accounts	4.8
Will concentrate on new home construction	4.0
Will give increased customer service	3.2

Notice high percentage of dealers who will increase advertising after the war in relation to those who would like to see advertising discounts discontinued.

What has been the policy of the electric utilities on assisting dealers with the installation of electric ranges?

No assistance of any nature has been given in the case of 67.4% of the utilities; 23.2% make partial financial allowance; 9.4% paid the full amount of installation cost.

The greatest post-war problem of the furniture store in electric range selling is how to handle best the installation question, especially where the existing service entrance is of insufficient amperage and voltage. NRFA recommends that furniture dealers and their local utility heads confer on how this situation can best be handled.

What cooperative policies did the local utilities have before the war?

Of utility companies which cooperated at all with dealers, 100% worked with them on advertising, 71.1% maintained a system of prospect files for dealer reference, and 35.5% allowed the dealers to use the company sales floor for the display of their own merchandise.

Gas is the perfect fuel for heat treating so vital to the production of armament. But it must be clean to assure constant delivery and easy control. Blaw-Knox gas cleaners do the job efficiently—prevent "Old Dusty" from slowing up the job, retarding Victory!

BLAW-KNOX DIVISION OF BLAW-KNOX CO.
Farmers Bank Building
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Now available on AA5 Priority or better. Blaw-Knox Gas Cleaners — *as low as* $95

Write for complete details on the ideal low cost "K" series Gas Cleaner for your use. Available in two sizes and three weights for installation in front of industrial meters, at district regulator stations, small city gate stations, etc. State where to be placed, maximum gas volume MCF hour, the minimum and maximum pressure.

BLAW-KNOX GAS CLEANERS

WARTIME RESIDENTIAL RANGE SURVEY

Brooklyn Union Finds Out What the Consumer Thinks About the Gas Range

THE following report, forwarded by Hugh Cuthrell, vice president of the Brooklyn Union Gas Co., covers the results of a survey of customers' domestic ranges made recently by that company's New Business Department.*

Purpose: The purpose of the survey was "to determine the physical condition, the degree of use, and operating characteristics of gas appliances, and to collect data on wartime relations and thinking of our customers for present and future guidance."

It was felt by the company that the additional customer interviews, in addition to securing the range information, would be desirable from the point of view of public relations because the number of personal interviews has been greatly decreased by certain results of wartime restriction:

1. Curtailment of sales calls;
2. Bi-monthly billing and collecting system; and
3. Curtailment of service calls by the Distribution Department.

Fundamentally, the information sought in the survey was:

1. Present physical and operating condition of gas ranges now installed.
2. Customer opinions of their gas ranges.
3. Customer thoughts on improvements desired in future ranges.
4. Customer thoughts on the utility's service.

Method: A sufficient number of customers (something over 6000) were interviewed to arrive at a fair average sample. Furthermore, since only a small percentage of all customers could be interviewed, care was taken in the selection of representative areas based on types of dwellings, purchasing power, and a wide knowledge of the territory.

The questionnaire used was designed to secure two general types of information:

1. Data based on the observations of the interviewer regarding the present range and a record of the adjustment work performed.
2. Reactions and opinions of the customer anent the design of a post-war range.

Because of these two distinct objectives, the recording of information on each objective was kept separately and different survey report forms used to record each. In a great many homes it was possible to obtain information regarding the present range but no worthwhile opinions on the design of post-war ranges. For these reasons and also to simplify presentation and analysis of results, it was considered that two surveys were made. In some homes, both were completed, in others only one.

As a part of the survey, adjustments were made where necessary on all ranges inspected. This free service facilitated the interviewing of customers. The interviewers were given a thorough basic training in the making of range adjustments.

At the conclusion of the survey, a letter was sent to 500 customers who had been interviewed asking their reaction to the visit and whether the operation of their range had improved. Eighty replies were received.

SUMMARY OF RESULTS

Part I: Observations on the Present Range

Age of Range: The estimated average age of all ranges in the territory is between nine and 10 years with a probable additional life of seven years. Their physical condition was found to be good, indicating that they will last for any probable war period. Based on the opinions of the interviewers, 18% of all ranges can be considered, by normal standards, to be in need of replacement.

Insulations: Twenty-nine per cent of all ranges are fully insulated, 25% are semi-insulated, while 46% have no insulation. These figures are not correct for ranges sold in recent years. They are descriptive, however, of ranges now in use by the operation of which the public passes judgment on gas as a cooking fuel.

Condition of Top Burners: Eighty-eight per cent of the ranges inspected had top burners in good or fair condition. However, 59% of the ranges had one or more top burners which were poorly adjusted. In view of the fact that most cooking is done on the top burners, this average poor condition is disquieting.

Top Burner Pilots: Sixty-seven per cent of all ranges have a top burner pilot, indicating a considerable number of very old ranges or ranges from which the pilots were removed. Of those ranges which were pilot equipped, it was found that 23% were not in use and were relighted, and 43% were adjusted.

Size of Range Ovens: In 93% of the homes visited the size of the oven was considered satisfactory, indicating that present design is generally correct.

Condition of Oven Linings: A high percentage (88%) of the oven linings were found to be in good or fair condition. The predominating defect in the balance was rusting.

Automatic Oven Pilots: As might be expected, only 3% of the ovens are equipped with automatic means of ignition. Of equal or greater interest is the fact that on 38% of the ovens so equipped, the pilots were found to be operating poorly or were not in use.

Broilers: An overwhelming percentage, namely 92%, do not have a separate broiler burner. All broiler and oven burners appear to be in better condition than top burners. Less than 10% needed adjustment. Since only 35% of the broiler trays were of the smokeless type, many customers do not enjoy this desirable feature.

Oven Heat Control: Indicative of increasing acceptance of this feature, it was found that 30% of ranges are so equipped. Of these, 25% were found to be inaccurate; some were out of calibration enough to make them of little use.

Steel Wool in Range Flue: It was found that steel wool had been placed in 7% of the oven flues. This is supposed to reduce the discoloration of

TABLE 1. RANGE FEATURES DESIRED ON NEW RANGE

	Desirable	*Unnecessary*	*Don't Know*
Automatic oven lighter	46%	26%	28%
Deep well cooker	17	28	55
Automatic timer clock for oven	21	23	56
Automatic timer clock for top burners	16	28	56
Oven heat control	94	3	3
Top griddle	29	45	26
Coverall for top burners	91	5	4

*Excerpts from a more complete report.

ADDITIONAL OBSERVATIONS BROUGHT OUT BY THE SURVEY

1. Many people do not know when a range burner is poorly adjusted. We found burners which had been operated with a high, yellow flame for many years.

2. The operation of the oven heat control is widely misunderstood. Women turn it to a high temperature setting under the impression that they get faster heating. Consequently, the oven overheats and inferior cooking results are obtained even though they have reset the control to the desired temperature. This tends to discourage baking and reduces the use of gas.

3. Most new ranges are installed and left operating just as they come from the manufacturer. Unless a request for adjustment service is made by the customer, these ranges operate for years this way. The average customer has no way of knowing whether the burners are adjusted for best results. If their operation is poor, he assumes that gas ranges just work that way.

4. Many, perhaps a majority of our customers, do not think of us in connection with gas range service. The belief is very prevalent that if a range was not purchased from the company, we will not render service. Some are reluctant to call on us for service because of fear a charge will be made.

5. Gas range repair facilities in this area are not adequate. A few widely scattered stores carry a limited stock of repair parts and, in some instances, these agencies are not of a high calibre. Long waits for repair parts are the rule. Our own service in this regard is also slow. As a result, many ranges are operated with broken parts, which does not enhance the public's opinion of gas ranges.

6. Many houses in the older sections of our territory require larger house piping before full satisfaction can be obtained from a gas range. In large sections of Williamsburgh, Nassau and Metropolitan branches, ranges are operated on house piping originally installed for gas lights. The kitchen sidearm water heater cannot be used when the range is in operation and the gas pressure drops when more than one range burner is used.

7. Most gas ranges are hard to clean. The burner box, which needs the most cleaning, presents such an array of parts that many housewives are frightened away from any attempt to clean it. As a result, gas ranges are considered by many to be necessarily dirty appliances.

8. Tenants in multi-family dwellings were particularly indifferent. Ranges installed in apartments are usually purchased on a price basis by speculative builders who are not interested in range performance or life. As a result, tenants are accustomed to inferior ranges and the selection of an apartment is not affected by the type or quality of the gas range. Poor burner adjustment is common in these homes and the tenants usually do not take any steps for betterment.

the wall and ceiling by removing grease vapors from the oven flue products. This practice is hazardous. The interviewers were permitted to remove the steel wool in 77% of these cases.

Shut-off Gas Cock in Kitchen: It was found that in 77% of the homes a shut-off cock had been installed on the gas line supply of the range. Of these, 89% were accessible and therefore readily usable.

Service Work and Repairs: The following figures show in actual numbers the adjustment work performed:

Top burners adjusted (ranges)	3598
Top pilots adjusted	1559
Pilots relighted	417
Oven burners adjusted	394
Oven pilots adjusted	11
Oven heat controls adjusted	335
Steel wool removed from flue	321

In 285 cases customers were referred to the Customers' Service Division or other agencies for parts and service.

The greatest interest in the purpose of the survey and appreciation of the range service work performed were shown by owners and tenants in one and two-family residences. Tenants in multi-family dwellings showed little interest.

Part II. Reactions and Opinions on the Design of a Post-War Range:

The following records the thoughts and reactions of customers to their present range and new range features. No attempt was made to sell or influence the opinions of persons interviewed on any of the suggested innovations for post-war ranges.

Table 1 indicates a preference for those features which are well known and already have considerable public acceptance. Style and up-to-dateness influence customer opinion at least as much as utility. For instance, coveralls are desired but little used except for special occasions.

Opinion of Present Range: Eighty-five per cent of the customers expressed satisfaction with their present ranges. Only 15% expressed dissatisfaction. There was no single outstanding reason given. The objections included:

Lack of heat control.
Difficulty in cleaning.
Smoke from broiling.
Lack of insulation.
Low broiler.

Range Top Design: In 92% of the interviews, a preference was expressed for four top burners. It is of interest that almost exactly the same number (91%) have four top burners. Regarding top burner arrangement, 59% prefer the conventional four burners located on the right or left side. The remainder are about evenly divided among other less common layouts. An overwhelming majority, namely 92%, consider that working space on the top of the range is essential.

A built-in electric lamp on top of the range was found in 7% of the homes. Of the customers having ranges so equipped, 32% do not use them.

Ovens—Location and Visibility: Although 93% expressed a preference for a table height oven, there exists an undercurrent of desire, not always forcefully expressed, for a high oven for greater convenience and visibility.

More than half (59%) expressed a desire for a glass panel in the oven door; 50% want an electric light in the oven.

Broilers—Use and Location: It is generally known that many customers make little use of their broilers. However, when questioned, 70% of the customers stated that they use them considerably. Observations indicate that the use of the broiler varies widely in different neighborhoods and nationalities. On the question of broiler location, most housewives want the broiler to be as high as possible but not at the expense of lowering the oven or radically changing the appearance of currently accepted styles.

CP Ranges: Although there has been no local and very little national advertising of the Certified Performance range in many months, 14% of the people interviewed were familiar with it. This means that past efforts to establish this appliance were successful.

Color of Range: Indicative of a trend away from color in range finishes is the high percentage (91%) who prefer white.

Toasting and Coffee Making: The survey shows that 89% use electric toasters, but that 96% use gas for coffee making.

The survey has been most helpful to Brooklyn Union in renewing customer contacts, in increasing customer opinion of the company and its fuel, in training sales personnel, and in obtaining information of value in planning for the future.

Five Years Under the Natural Gas Act

THE Federal Power Commission has submitted a comprehensive report covering the first five years of its administration of the Natural Gas Act of 1938 to Representative Clarence F. Lea, chairman of the Committee on Interstate and Foreign Commerce, House of Representatives.

In summarizing its activities under the statute, which confers upon the Commission responsibility for regulating the wholesale rates, accounting practices and certain operations of natural gas companies engaged in interstate commerce and, in effect, places every interstate pipeline company in the country under Federal control, the Commission says, in part:

'The need for the act in the field of rate regulation was apparent from the outset, for complaints were filed with the Commission before a staff could be assembled to handle them. The first of these, filed two weeks after the act was approved (July 6, 1938), was that of the city of Cleveland, Ohio, against the rates of the Hope Natural Gas Co. This was followed on July 25 by the city of Akron's complaint against Hope. The Illinois Commerce Commission, on Sept. 23, 1938, filed a complaint against the rates of the Natural Gas Pipeline Co. of America, which transports and sells gas for ultimate consumption in Chicago and the northern Illinois area. On Nov. 28, 1938, the Public Service Commission of New York filed a complaint against the New York State Natural Gas Corp. Less than a month later, the city and county of Denver, Colo., filed a rate complaint against the companies supplying gas in that area, which was followed by a similar complaint by the Public Service Commission of Wyoming, filed Jan. 9, 1939. In other words, within less than six months after the act was approved, the Commission was proceeding with several large, important rate cases affecting more than 2,000,000 natural gas customers and involving, ultimately, $12,204,000 in rate reductions."

Rate Reductions, $35,000,000 a Year: To date rate reductions for natural gas have aggregated $34,680,000 a year and affect millions of customers in all the 29 states in which natural gas is sold in interstate commerce for resale. These have been achieved in formal proceedings or through informal cases and voluntary action on the part of natural gas companies, based on standards established through formal proceedings.

Rate Making and "Reproduction Cost" Estimates: Recent decisions of the Supreme Court have established the fundamental concepts, standards and methods of rate regulation in accordance with the Congressional intent embodied in the Natural Gas and Federal Power Acts, according to the report, which states:

A CONDENSATION of FPC Release 2342, entitled, "Federal Power Commission Makes Comprehensive Report to Chairman Lea Covering First Five Years of Administration of the Natural Gas Act of 1938, etc." issued January 23, 1944.

"The so-called 'fair value' formula of Smyth v. Ames need no longer be followed. That decision prescribed a complex set of factors, including 'reproduction cost,' to be considered in the determination of a rate base and, since 1898, has greatly impeded state and Federal regulation.

"The decisions of the court in *Federal Power Commission v. Natural Gas Pipeline Co. of America*, decided in 1942, and in *Federal Power Commission v. Hope Natural Gas Co.*, handed down on Jan 3, 1944, leave no doubt that the 'fair value' formula, which in practice had been construed to mean 'reproduction cost,' may hereafter be disregarded. As a result, this Commission and other regulatory bodies, both Federal and state, are, in the words of Chief Justice Stone, free within the 'ambit of their statutory authority' to fix rates in a practical, pragmatic way. The decisions in these cases constitute the most important pronouncements of the Supreme Court in the field of regulatory law in several decades."

Rate Investigation in Process: Important formal rate investigations are under way involving the following nine companies: The People's Natural Gas Co., Pittsburgh, Pa.; United Fuel Co., Charleston, W. Va.; Warfield Natural Gas Co., Charleston, W. Va.; Huntington Development & Gas Co., Charleston, W. Va.; Cincinnati Gas Transportation Co., Charleston, W. Va.; Mississippi River Fuel Corp., New York, N. Y.; Hope Producing Co., New York, N. Y.; Southern Carbon Co., Monroe, La.; and United Carbon Co., Charleston, W. Va.

The work in handling current cases, coupled with that involved in rate cases pending and that of additional wartime duties imposes so heavy a burden on the Commission's limited staff that it is not expected that the Commission will be able to initiate further rate cases during the war.

Certificates Cover Nearly $500,000,000 of Facilities: Since 1938 the Commission has dealt with 241 applications to construct, extend, acquire or operate natural gas facilities.

A total of 85 applications for certificates to construct new facilities or to acquire existing facilities had been received by the Commission between February, 1942, and the end of December, 1943. Of these, 71 were for the construction of facilities at an estimated cost aggregating $267,000,000 and 14 were for the acquisition of facilities having an aggregate book cost of $203,000,000. Thus, the construction or acquisition of nearly a half billion dollars of natural gas facilities has been brought before the Commission in the 23-month period.

Uniform Accounting Established: During the past five years the Commission, in collaboration with State Commissions, has formulated a system of accounts, made effective on Jan. 1, 1940.

The Commission has also prescribed an annual report form for natural gas companies, calling for detailed operating and financial information.

Conservation Problems: The Commission, says the report, is keenly aware of the importance of conservation and the serious problems raised by the continued construction of large natural gas pipelines and the accelerated depletion of our natural gas reserves due to war activities.

In hearings on certificate cases the Commission has permitted intervention of representatives of coal, railroad, labor and other interests concerned with the production or transportation of competing fuels. Their representatives have strongly urged the Commission either to deny certificates on the general grounds of conservation or to attach restrictions which would severely limit the uses for which natural gas might be sold.

Unanimous view of the Commission has been that, inasmuch as the Congress had not given it comprehensive powers to deal with the end uses for which natural gas is consumed, and had granted the Commission no authority to regulate rates for the direct sales of natural gas to industry, it was the duty of the Commission not to seek to exercise such authority until the Congress should amend the Natural Gas Act to confer such specific powers.

Other Activities: Participation in the protection of gas systems against sabotage and other hostile acts; agreement with WPB codifying general policies, arrangement and procedures observed by the two agencies in natural gas matters; the publication of a directory listing all natural, mixed and manufactured gas companies in the country; and the publication of an authoritative map of natural gas facilities and producing areas, distribution of which has been restricted during the war.

MEN OF SKILL AND WILL
JOIN THE CORPS OF ENGINEERS
CHOOSE THE CORPS OF ENGINEERS WHILE YOU CAN
MEN BETWEEN 38-50 MAY JOIN BY VOLUNTARY INDUCTION
MEN SKILLED IN THESE TRADES AND OCCUPATIONS ARE PARTICULARLY WANTED

PEOPLES GAS, LI

DEVOTES WINDO

WAR is drama, action and excitement of unabated news value. But even war is made up of individual efforts, every medium of stimuli to greater and continuous exertions for victory must be pressed into service.

Realizing that window display is a potent force in moving the wheels for victory and that this accepted information medium must take its place with the spoken and printed word, The Peoples Gas Light and Coke Co., Chicago is devoting practically 100% of its window space to furtherance of the war effort. These gas company windows mobilized for war in a consistent and scheduled program render a real service to the nation and the community. The display program is under the direction of Harry Swenson.

The war program subjects to be covered are many and the timing important whether the subject be war bonds, recruiting or salvage. The nation-wide Retailers War Program may well serve as a calendar schedule for utility companies also since this organized program is predicated on a concerted effort at a designated period for its greater impact. There are, however, certain angles of war activities promotion that are natural subjects for displays by public utilities and can be better covered by the gas company than by a local department store. The Nutrition Program, Food conservation, Rationing information, Salvage urging, Fat Salvage and Victory Garden programs are typical subjects that fall as "naturals" for the gas company.

But the window displays of The Peoples Gas Light and Coke Co. have

THE MERCHANT MARINE SAILS THE SEVEN SEAS!
UNITED STATES MARITIME SERVICE
FOR MEN OF SPIRIT AND ACTION-THERE'S A SALTY JOB TO DO. WAR CARGOES & SUPPLIES MUST REACH OUR FIGHTING FORCES AND ALLIES
A VITAL JOB TODAY — A PEACETIME JOB TOMORROW
UNITED STATES MARITIME SERVICE
INFORMATION OFFICE
844 RUSH STREET
ROOM 515

VOLUNTEER WORKERS ARE NEEDED BY THE RED CROSS
GIVE YOUR TIME NOW
CHICAGO RED CROSS
15,554 WORK HOURS WERE REQUIRED IN A TYPICAL MONTH THIS YEAR TO PREPARE AND SERVE 27,331 INDIVIDUAL MEALS TO:
DISASTER VICTIMS
MEN AND WOMEN IN THE SERVICE
BLOOD DONORS AND OTHERS
MORE VOLUNTEERS ARE NEEDED BY THE CANTEEN CORPS TO HELP CARRY ON THIS IMPORTANT PART OF RED CROSS WORK

LID COKE COMPANY

TO WAR EFFORT

not been limited to these phases only. Current windows show exhibits devoted to recruiting of WAC's, WAVES, Spars, U. S. Maritime Service, and the Red Cross. There are always one or more displays urging the purchase of war bonds. One of the more striking displays was that designed to boost recruiting for the U. S. Corps of Engineers and another display graphically depicted the salvage program of the Quartermaster Corps. Subjects and materials for commanding displays are unlimited and easily obtainable. In many cases a factual presentation of a story draws the most attention—the inference of the dramatic lies behind every display and requires no great build-up; graphic and actual materials are generally available and of course, in a city such as Chicago it is an easy matter to establish contact with the various bureaus and offices dispensing material and information. All of these outlets are enthusiastic about finding new and effective channels for promoting public interest and instruction.

These various agencies for war activities and the branches of the armed forces have been grateful for the cooperation given by the gas company in presenting to the public their particular plea or story. The public too, has expressed its interest and approval of the patriotic use the gas company windows have been put to, the display windows thus continue to work for good public relations and above all to render a service at a time when our all is at the disposal of our country for Victory and lasting peace.

ARMY REPAIR SHOPS TAKE A STITCH IN TIME
U.S. ARMY OWNED AND OPERATED
QUARTERMASTER REPAIR SHOPS
ALL OF OUR MATERIAL AND MANPOWER RESOURCES ARE OR WILL BE INVOLVED IN THIS WAR. THEY MUST BE CONSERVED AND UTILIZED IN THE MOST EFFICIENT MANNER POSSIBLE.
—MAJOR GENERAL H. S. AURAND
COMMANDING GENERAL 6TH SERVICE COMMAND

Post-war NOTES and NOTIONS

By STANLEY JENKS

Manufacturer's Position

Some of my utility friends, it seems to me, are prone to get rather too querulous at the expense of the appliance manufacturer. They seem to forget or overlook the fact that the gas appliance manufacturer, his plant converted to vital war production, has plenty of immediate problems that are distracting, to say the least. He is naturally post-war minded too and making every effort to anticipate the post-war requirements of his utility friends. But please appreciate his position. Contract negotiations, government inspectors, unions, unfamiliar products, renegotiations, cut backs, labor shortage, contradictory regulations from umpteen government agencies. Oh, death, where is thy sting? Please bear with him if he cannot at this stage be more positive in outlining his future intentions. You can rest assured, he'd much rather be making gas appliances and producing the equipment his plant was designed for than be tossed around in the maelstrom of war. In the meantime, while getting on with the war, your gas appliance manufacturer is justifiably looking to the utilities to formulate an appliance program which will embody the simplifications and standardization outlined in the first of the three objectives of the Post-War Planning Committee reported by Chairman A. M. Beebee.

And without *plastonics*, please.

Appliance Load Values

Every gas appliance has a load value. That is fundamental. I see where J. J. Quinn, Boston, Mass., is chairman of a sub-committee of the Market and Research Committee, and is planning to issue a report entitled "Annual Revenue per Appliance." This is no place to get on a soapbox, but for the life of me, I cannot see why every single gas company in the United States has not already got this information. It is available right there in their own books, and how any intelligent sales plan could ever be formulated without it is beyond me. Back in 1938, the rate committee report of the AGA by actual field check gave the following appliance load values:

Service	*Monthly Load*
Cooking	10.6 Therms
Manual Water Heating	9.0 Therms
Automatic Water Heating	20.0 Therms
Refrigeration	10.0 Therms

These figures, as the report pointed out, are averages compiled on a more or less national basis, and subject, of course, to local variations in climate and living standards.

In my day, let's say 12 years ago, in the Northern Indiana Public Service Company, we made it our business to get the facts by actually surveying consumption records of thousands of appliances before and after installations. The figures we used as the basis of our salesmen's compensation and dealer cooperative plans were:

Appliance	*Annual Load Credit*	*Annual Revenue Credit*
Gas Range (replacement)	38 Therms	$10.80
Gas Range (new customer)	114 Therms	32.50
Automatic Water Heater	250 Therms	35.00
Automatic Low Input Heater	137 Therms	24.00
Tank Heater with Remote Control	100 Therms	15.00
Tank Heater	50 Therms	10.00
Home Heating Job	Estimated	Estimated
Auxiliary Space Heater	34 Therms	6.00
Gas Refrigerator	120 Therms	19.00
Incinerator	10 Therms	3.00

As I said, we in the Northern Indiana Public Service Co. did this job of research because we needed the information to formulate our sales plans, and because no national committee could do it for us. Increased efficiency in appliances and rate changes have undoubtedly revised the above figures in terms of today's and tomorrow's post-war planning. But, nevertheless, this is essential information, vital to successful planning.

I would be interested in knowing how other companies have evaluated their appliance load.

Cost of Service

The gas industry is not alone among the old reliables being summarily written off as obsolete by our heads-in-the-clouds postwar prognosticators. These lads have also seen the skies black with airplanes. They have read advertisements and magazine stories of bazookas or grenades in Philadelphia or Bridgeport last week and being used in Italy this week. Marvelous thing this air transport! In fact, it's the *only* way to ship goods in worldwide traffic after the war—so they say.

A friend of mine, who has a definite bread and butter interest in the shipping business, told me recently of a meeting, which he attended, of the Propeller Club of New York. The speaker had been John E. Slater, vice president of American Export Lines and American Export Airlines. Mr. Slater can be admitted as an expert on both sea and air transportation. He concedes that as much as 50% of the transoceanic de luxe passenger business may go to air travel after the war. (For example, Pan-American is already advertising postwar round trip fares such as $450 to Capetown, South Africa.) But, discussing freightage, Mr. Slater trotted out some figures that indicate that it will be a long time before the sea ways are abandoned to fishermen, icebergs, porpoises and floating egg crates. Cargo shipping rates are between 1½ to 3 mills per ton mile. Compare these figures with those of Edward P. Warner, vice chairman of the civil aeronautics board, as quoted by Mr. Slater. Mr. Warner estimates that postwar air cargo rates per ton mile will be 22c for a 500-mile haul, 24c for 1000 miles, 34c for a 2000-mile haul, and 40c for a 3000-mile haul.

It seems to me, this is an apt illustration of a point which needs more hammering home by the gas industry. The economics of gas service are going to be vital weapons in the forthcoming battle of the fuels. So long as a Btu. can be delivered to the point of use through a gas pipe cheaper than along a copper wire, we in the gas industry have a decided advantage, though not unsurmountably so. Aesop's hare also had an advantage.

DUALLY COMPLETED OIL AND GAS WELLS

Savings on 37 Arkansas Drillings: $2,250,000 and 6700 Tons of Steel

By L. L. JORDAN and ALEC CROWELL
Engineers, Arkansas Oil & Gas Commission

OVER $2,250,000 and 6700 tons of steel is the initial saving effected by the first 37 dually completed oil and gas wells in Arkansas. These dual completions, as of Dec. 1, 1943, account for an average monthly production of 200,000 barrels of high gravity crude oil and condensate and 2 billion 100 million cu. ft. of natural gas, all pledged to the war effort. The high gravity production is used as a diluent for waxy East Texas crude, facilitating the movement and greatly increasing the volume that can be transported by pipe line to the eastern seaboard, while the natural gas, after its sulphur and natural gasoline content are extracted, moves on in its entirety to war industries and military facilities. Only 37 holes were drilled to obtain 74 producing wells.

Concurrent production from two productive zones through a single well bore has only recently become mechanically acceptable. The Arkansas Oil and Gas Commission, up until May 27, 1942, had looked upon multiple-zone completion of oil and gas wells as too hazardous, conservation-wise. On the date mentioned, a hearing was held to which the public and all parties in interest were invited, and the Commission found that mechanical devices were available which would permit the dual completion and production of wells having more than one commercial pay section without the commingling of fluids or gas.

Upon the issuance of their order permitting dual completions, the Commission made the matter elective, but provided that only two formations could be produced simultaneously, one through the tubing and the other through the annular space between the tubing and casing. They also made the completions and recompletions subject to four conditions:

1. That sufficient notice be given the Director of Production of the Commission to enable him to notify all offset operators of a proposed dual completion into one of a multiple or separate zone.

2. That these dual completions be made in such a mechanical manner as to meet with the approval of the Director of Production and Chief Engineer of the Commission.

3. That no sweet gas be produced from any formation through a dually completed well or any other well for any purpose other than as provided by the conservation law; and that no sweet gas of any type be permitted to escape to the air.

4. That each well dually completed be regarded as a separate and distinct well; that a permit be secured for the dual completion as though the well were a new well; that the production be taken separately and measured separately; and that all rules, regulations and orders governing individual oil or gas wells shall be strictly adhered to.

Cost Evidence

The commission heard evidence at its hearing on May 27, 1942, to the effect that the average cost of the common deep well in Arkansas, including casing, tubing, christmas tree, etc., is approximately $78,100. It was recorded that a single zone completion to 8000 ft. would cost $65,600 and one to 9000 ft. would cost $76,700. Thus, by dual completion, a saving of $64,200 or 45% of the cost of the two wells could be realized.

Further, the Commission was advised that the total steel necessary for completion of the deep wells was approximately 200 tons, while for a dual completion, the figure was only 13 tons more.

From the evidence adduced at its hearing, the Commission issued the order mentioned, having secured verbal agreement on its contents from the Petroleum Administration. Three operators proceeded to recomplete their wells in accordance with the terms of the order, but on June 11, 1942, the Commission was advised by PAW that these dual wells were in violation of Conservation Order M-68. Unfortunately, a year's time lapsed before the PAW was convinced of the wisdom of the Commission's order. The PAW issued its Supplementary Order No. 9 to PAO No. 11 on May 22, 1943, which is applicable to the Dorcheat-Macedonia Field. Development has gone forward at a rapid rate since that time, the foregoing having been mentioned only in explanation of the retarded development between May 27, 1942 and May 22, 1943.

Thirty-two of these 37 dual completions are in the Dorcheat-Macedonia Field of Columbia County. This field which is under an extensive development program, has already proven a reserve of 90 million barrels of oil and distillate and over 400 billion cu. ft. of natural gas. There are 66 producing well bores in the field, 21 of which are located on 1160 acres and operate as a unit, while two are on 40-acre units, and the remaining 43 are in the center of 80-acre units.

The deeper pool—Smackover Limestone—which is found at a depth approximately 8600 ft. to 8800 ft. subsea, accounts for two-thirds of the reserves mentioned, while the remainder is credited to the upper productive pools—Cotton Valley Sandstone—which is found from 6500 ft. to 8200 ft. subsea.

On December 1, 1943, the 66 well bores in the Dorcheat-Macedonia Field represented 25 single completions in the Smackover Limestone, 9 single completions in Cotton Valley Sandstone lenses, 8 dual completions in two Cotton Valley Sandstone lenses, and 24 dual completions in the Smackover Limestone and Cotton Valley Sandstone. Thus we have 66 holes drilled in this field and are getting the production from 98 wells.

The upper pools in this field are numerous Sandstone lenses (Cotton Valley) with reservoir pressures of from 2900 psi. to 3600 psi. Some of the lenses produce water-white condensate of 60°-66° API gravity with ratios up to some 20,000 cu. ft. to the barrel. Other lenses produce dark 42° API gravity oil with ratios as low as 900 cu. ft. to the barrel. The gas, without exception, is free from hydrogen sulphide.

The lower pool (Smackover Lime) has intercommunicating porosity throughout with a maximum interval above water of 122 ft. While the major portion of the reservoir volume contains gas, there is a varying column of oil across the pool. A few wells

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A REPORT OF the Research and Coordinating Committee presented before the Winter Quarterly Meeting of the Interstate Oil Compact Commission, Wichita, Kan., Dec. 10, 1943.

are now producing from this oil section, but the majority produce a liquid ranging in color from water-white to straw of 60°-66° API gravity with ratios up to 20,000 cu. ft. to the barrel. The reservoir pressure is 3210 psi, the temperature of the zone nearest the packer 220° F., while the gas contains an average of 1945 grains of hydrogen sulphide per 100 cu. ft.

Well Completion Program

The general program of well completion in the Dorcheat-Macedonia area has been to drill the entire hole by rotary, cement 100 to 400 ft. of 13⅜ in. surface pipe with 200 to 375 sacks, 2200 to 4100 ft. of 9⅝ in. intermediate casing with 1000 to 1800 sacks, the oil string of 5½ in. casing through the producing Smackover with 1000 to 2500 sacks, and complete the tubular equipment with 2-in. tubing. Both single and double separation are in use, while the general practice is to use wooden storage tanks.

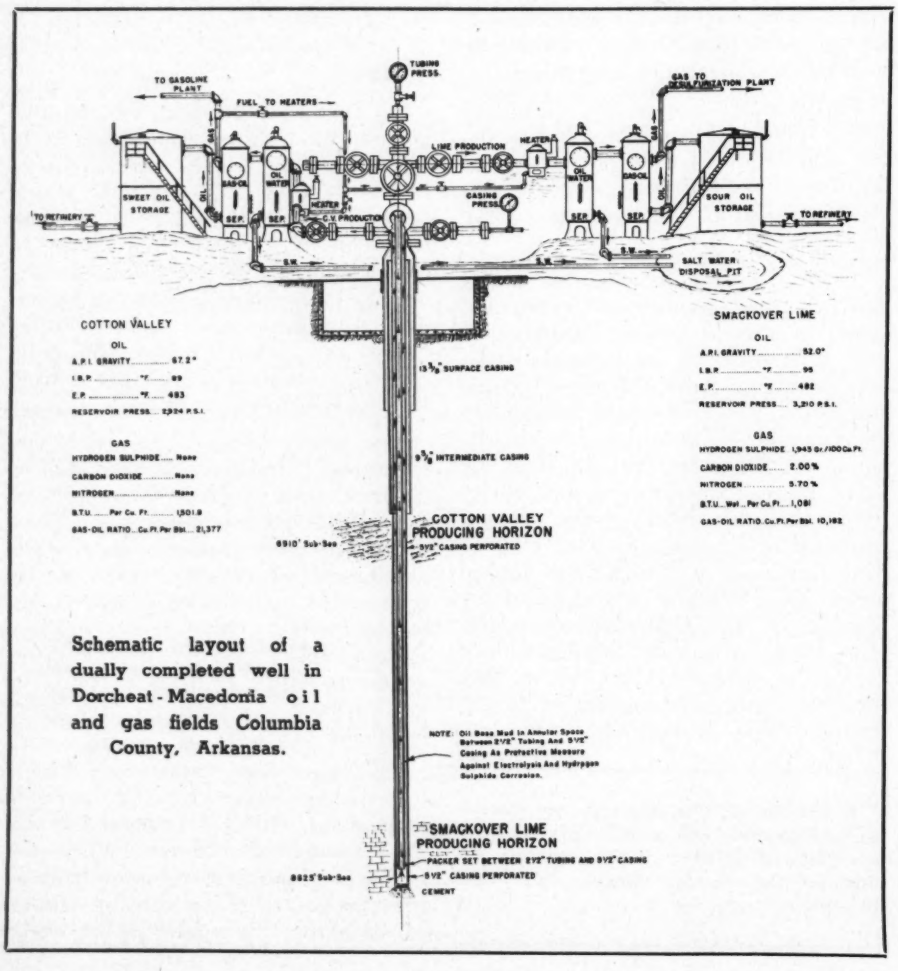
That dual completions have been successful is reflected in a brief resume of operations at a well completed over a year ago, and as yet there has been no evidence of packer leaks. This well was drilled to 8920 ft. and a 5½ in. oil string of 17 lb. casing set at 8919 ft. and cemented with 1800 sacks of cement. The plug was drilled out to 8915 ft. and a Cotton Valley lens was gun-perforated from 7190 ft. to 7200 ft. with 80 shots. A Halliburton testing tool was run and a Cotton Valley lens tested. On this initial drill stem test, with a 16/64 in. top and bottom choke, 33 barrels of 47° API gravity oil and 37,365 cu. ft. of sweet gas were produced.

Following this test the Smackover Limestone was gun-perforated from 8873 ft. to 8895 ft. with 176 shots. A TIW Hook-wall packer, without circulating ports, was run in the hole on 2⅜ in. tubing, the surface joint of the tubing being a slick joint so as to permit raising and lowering through the Gray tubing head and still have the well under control at all times.

The mud in the well bore was displaced with clear water and a pressure of 500 lbs. placed on the casing for a short period, thus displacing some of the water with gas. The packer was then lowered in place and set. By the time the operation of bolting down the christmas tree was completed, the Cotton Valley lens was flowing through the casing.

One trip with a swab was necessary to bring in the Smackover Line production through the tubing. On the initial test the Smackover Limestone produced 240 barrels of 64° API gravity condensate and 3100 Mcf. gas.

Multiple-zone completion of oil and gas wells, based upon the foregoing discussion, sounds relatively simple. This is not a fact. Of the first 16 attempted dual completions in Arkansas, half were unsuccessful in segregating the production from two zones in the initial effort. But experience now has made dual completion or dual recompletion of oil and gas wells in Arkansas as routine as any drilling and original completion operation.



Schematic layout of a dually completed well in Dorcheat-Macedonia oil and gas fields Columbia County, Arkansas.

Allowables Increased to Meet Oklahoma Peak Loads

The Oklahoma state conservation officer is authorized to increase production of natural gas from the West Cement, Medrano pool if he determines that an emergency exists, in order to prevent a shortage of gas to citizens of Pawhuska, Okla., in extremely cold weather. The Oklahoma Corporation Commission authorized this action in an order dated Jan. 14.

Pawhuska is on the transmission system of the Cities Service Gas Co., and directly served by the Gas Service Co., of Bartlesville, Okla., a distributing subsidiary. Citizens of that city filed a petition with the Commission in December alleging that some of its industries had been shut off during a cold period in that month. They asked that the allowables of wells in the Cement, Medrano sand pool be increased to permit the Cities Service, which draws part of its supply from that field, to increase purchases there.

The Commission held that no emergency exists at Pawhuska as the Cities Service Gas Co. arranged with the Oklahoma Natural Gas Co., following the December cold spell, to purchase 30,000,000 cu. ft. of gas per day when emergencies arise on its system.

The Commission found that Cities Service Gas Co. is connected to approximately 28 sources of supply in Oklahoma and recommended that it investigate these other sources to see if more than the 25% potential production, allowed by law in fields other than West Cement tapped by Cities Service, could not be produced without waste. The commission expressed willingness upon application, to permit greater production from any wells than the allowable, if this can be accomplished without waste of gas or oil. It held, however, that since the West Cement, Medrano pool, produces both oil and gas, gas allowables there have been cut to a low level in order to prevent waste and insure the greatest ultimate recovery of oil.

Current production of the West Cement, Medrano pool has been approximately 17,000,000 cu. ft. per day. The Commission ordered that this may be stepped up in emergencies to the gross allowable of 23,626,000 per day, but that overproduction of any wells to meet such conditions must be made up by deducting from future allowables, up to April, 1944.

Gas Register FOR THE INDUSTRY

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CORROSION AND PROTECTION

Of Buried Metallic Structures

Compiled and Abstracted by GUY CORFIELD, Technical Editor, GAS

1. Electrical Potential Phenomena (Cont'd)

Pipe-to-Soil Potential and Related Measurements

GORDON N. SCOTT, pipeline technologist, Los Angeles, Calif. Excerpts from a paper, "An Aspect of the 'Pipe-to-Soil' Potential and Related Measurements," presented before the Fifth Soil Corrosion Conference, National Bureau of Standards, St. Louis, Mo., March, 1943.

THE interpretation of measurements of the potential of a pipe line with reference to a copper-saturated copper sulfate electrode in contact with soil encompassing the pipe, and of related measurements, is an intriguing problem of practical importance.

The problem is of practical importance in that the solution of it promises the possibility of describing to a highly useful degree the condition of a pipe line without the necessity of uncovering a portion of it for examination. The writer has already on a number of occasions, by simple tests, located pipe which through corrosion had developed leaks not earlier detected. Among other important practical problems to which the subject matter of this paper has application is the justification in the economic sense for the use of insulating flanges to break up "long line" currents in the pipe line.

All readings herein reported, unless otherwise stated, are natural in that no external current as from cathodic protection or from leakage is involved. The "pipe-to-soil" potential readings vary within the writer's experience roughly between 0.1 and 0.7 volts. Readings lower than 0.1 volt are occasionally obtained. No reading greater than 0.800 volts has been observed by the writer. Although the readings are considered to be negative the comparatives larger, smaller, higher, etc., are used in the arithmetical sense.

In Table 1 are given examples of readings made on newly laid and old pipe and on bare and treated pipe. In the table is given the number of measurements comprising the average shown, the minimum and maximum readings together with certain amplifying notes.

A comparison of Cases C and D is of especial interest, since each measurement in Case C was accompanied by a similar measurement on a rusty iron reference stake laid two weeks before the tests were made. Also of especial interest is the very close agreement between companion measurements along three parallel lines represented as Cases H, I and J.

The distribution along the pipe line of often widely different readings comprising the averages similar to those in the table is illustrated in Fig. 1. In Fig. 1 are plotted a portion of 206 potential readings taken at approximately 300 ft. intervals over nearly 12½ miles of a bare 10¾-in. O.D. oil pipe line. The 206 readings average 323 millivolts and range from a minimum of 155 to a maximum of 580 millivolts.

The interesting features of this chart are:

1. The especially well-defined area where the measurements are consistently less negatively than the average shown as a dotted horizontal line in the figure, and

2. The several sharp peaks in the curve, which peaks are suggestive of errors in reading the meters.

In Fig. 2 are shown data taken at somewhat longer intervals over nearly three miles (14,800 ft.) of a bare pipe line. The interesting features of this chart are:

1. The sharp inverted peak which occurs in the central portion of the figure.

2. The reproducibility of the curve in respect to the time between August and November.

3. The large difference in reading from 530 to 120 (more than 0.4 volts) in less than one-half mile of right-of-way.

A preliminary step to the interpretation of potential readings, such as have been given in the table and in

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GAS presents the second in a series of articles on the protection of buried metallic structures, a subject of vital importance in the war-time days of material shortages. The series will cover the following general ramifications of the protection problem: (1) Electrical Potential Phenomena; (2) Corrosion Coupons; (3) Pipe Coatings; (4) Cathodic Protection, Theory and Research; (5)Cathodic Protection, Application; (7) Miscellaneous—Soil Surveys, Special Problems, Anaerobic Corrosion. The first section of the first topic, Electrical Potential Phenomena, appeared in the January issue of GAS, p. 29.

In compiling and editing the series, GUY CORFIELD, technical editor of GAS, has used as source material more than 40 papers which were presented during the past 18 months before the meetings of the Fifth Bureau of Standards Soil Corrosion Conference, the American Gas Association, the Pacific Coast Gas Association, the American Petroleum Institute, and the Petroleum Industry Electrical Association.

Guy Corfield

GUY CORFIELD graduated in 1924 from the University of British Columbia with the degree of Bachelor of Applied Science in Chemical Engineering. For the past eight years he has been research engineer for the Southern California Gas Co., Los Angeles. In this capacity he has recently been in charge of the technical aspects of the installation of the company's butadiene project. Long active in the technical affairs of the gas industry, Mr. Corfield has served on numerous committees of the Pacific Coast Gas Association, being chairman in 1933 of the Association's Technical Section. His work with the American Gas Association has been continuous. This year he is serving on that Association's Chemical Committee, Gas Conditioning Committee, and on the Technical Advisory Committee for Domestic Gas Research Project No. 1—Domestic Gas Cooking. His connection with the AGA subcommittee on Pipe Coatings and Corrosion makes him a logical editor for this compilation of studies on the subject of corrosion.

POSTWAR PROBLEM

Jobs for Service Men— Better Business for You

Jobs for service men and war workers — millions of them — that's America's No. 1 postwar problem. Here's a definite, flexible nation-wide plan that will help create those jobs by starting peacetime industry's wheels whirling with a backlog of orders. It's a look-ahead, easy-to-use pre-selling plan that lines up profitable prospects for immediate postwar sales — makes your showroom Headquarters for Postwar Home Planning and enables you to *re-sell* old customers and *pre-sell* new prospects on Gas for Cooking and CP for Certified Cooking Performance.

HERE'S HOW THE (CP) BUSINESS BUILDING PLAN WORKS FOR YOU

1—*Your customers set aside NOW $100 to $150 EXTRA in War Bonds so they can buy the CP Gas Range they want and need immediately after the war.*

2—*From a special easy-to-use CP Postwar Prospect Card you find out EXACTLY what kind of a CP Gas Range your customers want and need and file the information for future follow-up and sale.*

3—*No money changes hands. No contracts are signed. But you can take definite orders and create a priority list if you wish.*

The CP Business Building Plan is practical, timely and as simple as ABC. You can expand it to cover every item on your sales floor. It's a program your customers will welcome because it helps answer a problem all America is thinking about and provides a way for your customers to get the new CP Gas Range they want and need immediately after the war.

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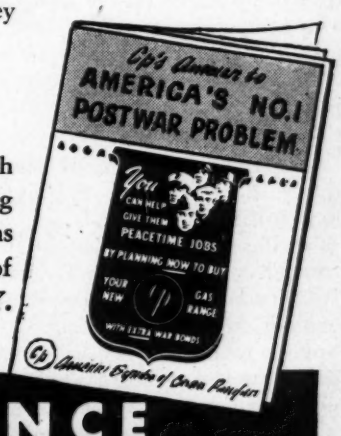
We're backing this war bond selling, job making and sales building plan with nation-wide promotion and a complete kit of dramatic, colorful posters, mailing pieces, publicity, prospect cards, newspaper ads, bond holders and definite plans to help you tie in. Write today for the CP Business Building Kit to Association of Gas Appliance and Equipment Manufacturers, 60 East 42 St., New York 17, N. Y.



CERTIFIED PERFORMANCE

TABLE 1. TYPICAL AVERAGE PIPE POTENTIAL READINGS

(Copper Sulfate Electrode)

Case	*No. Meas.*	*Average Reading (m.v.)*	*Max.*	*Min.*	*Approx. Age (Yrs.)*	*Type of Treatment*	*Remarks*
A	9	487	504	448	2	Heavy	Hot oil line
B	12	386	435	322	2	None	Hot oil line
C	22	491	615	410	8	Light	
D	22	668	798	515	2 weeks	None	Rusty iron stakes
EFG	15	471	498	385	20	Moderate	Three parallel lines
H	18	442	510	340	20	None	
I	18	438	505	360	20	None	
J	18	443	510	365	20	None	
KLM	33	660	690	620	2.	Heavy	3 adjoining areas
N	35	494	416	553	15	Moderate	
O	12	411	465	366	3	None	
P	21	600	698	450	3	Heavy	Slight stray current electrolysis
Q	44	380	560	298	24	Light—practically bare	Slight stray current electrolysis

the figures, is a listing of the sources of potentials which contribute to the final reading and an evaluation so far as possible of them.

These potentials may be listed as follows:

1. The reference electrode potential.
2. The iron-iron ion electrode.
3. Polarization (hydrogen).
4. The oxygen electrode.
5. Liquid junction potentials.
6. The IR drop through the coating.
7. The IR drop through the soil.
8. Local action.

The potential of the reference electrode is usually known or may be calculated. In the case of the copper sulfate electrode the value is approximately 0.3 volts.

The potential of the iron electrode is more difficult to calculate for a given condition (especially in the presence of chlorides, sulfates and nitrates) but in some simple cases is subject to thermo-dynamic treatment. The standard electrode potential of iron is accurately known, but in practice this potential is never attained because of the insolubility of certain salts and especially of the hydroxides which control the ferrous ion concentration. The insolubility of the hydroxides is a reason, therefore, why iron continues to corrode, since a state of equilibrium in the thermodynamic sense is never attained but instead a "steady state" is reached.

The important "steady states" are those which involve the hydroxides and sulfides of iron. In all of these cases the steady state potentials of the iron electrodes are readily calculated from available data. Interestingly enough in these cases the potentials appear to be entirely independent of pH. However, as noted above, the presence of certain cations may greatly alter the steady state potential.

Dependent upon pH, on the other hand, is the sizable potential existing at the ferrous and ferric hydroxide boundary.

Calculations of potentials on the above assumptions indicate that the copper sulfate readings should lie roughly in the following ranges for the conditions noted:

Reading in Volts	*Condition*
0.2 to 0.3	$Fe(OH)_3$—well aerated soils.
0.4 to 0.5	$Fe(OH)_2$—poorly aerated soils —old coated lines.
0.6 to 0.7	FeS—bacteriological corrosion —salt water, marshes, new pipe and marine environments.

Readings of less than 0.2 volts would be expected only in soils of pH less than six. Readings in excess of 0.7 volts do not seem to be accountable at any pH except possibly in the case of bright iron. Readings between 0.3 and 0.4 volts may be expected at pH values between seven and nine.

Liquid junction potentials may exist in the soil. Experimental evidence of such potentials, however, is lacking. Also such potentials may exist at the copper sulfate electrode-soil interface. The magnitude of these latter potentials are probably of small order.

Important factors in the potential readings which have not appeared to concern many writers are the sizable IR drops through the coating and through the soil.

As will be shown, a buried pipe line is rarely free of galvanic activity. Where this activity is of a more or less uniform character such that current entering or leaving the pipe is in approximate conformity with the potential distribution law, then the IR drops through the coating may comprise a substantial portion of the copper sulfate reading. On the other hand, where the galvanic activity is highly local in that long line components are inappreciable, then it can be shown by application of Kirchhoff's law that the summation of the IR drops through the coating is zero provided that the electrode is outside of the range of the soil and the local action.[1,2]

The soil gradients are rarely negligible. This is particularly true of corrosive soils in the higher resistivity brackets where measurements are so easily made. The theory underlying these often sizable gradients caused by an external current source has been shown by the writer[3] to have reasonable field confirmation, and the connection between them and the current strength, the soil resistivity, and the geometry of certain physical features has also been discussed at length by the writer[4].

Local action[2] is to be understood to mean the nonconformity of the potential distribution about the pipe to that distribution predicted by the theory to which the above brief reference has been made.

The field measurements, a portion of which were depicted in Fig. 1, were taken in such manner that the density of the galvanic current entering or leaving the pipe could be approximated. Such calculations of measurements over nearly 13 miles of the bare 10¾ in. O.D. pipe line show some surprising results.

In the first place, the pipe was found to be discharging current at the average rate of 0.114 milliamperes per sq. ft. of pipe surface over about 18.5% of the length of the pipe and at a maximum rate of 0.57 milliamperes per sq. ft. Secondly, the pipe was found to be accumulating current at the average rate 0.245 milliamperes per sq. ft. and at the maximum rate of 4.22 milliamperes per sq. ft. over the remaining 81.5% of the pipe line. These figures correspond to a total discharge of 4.44 amperes and a total accumulation of current 41.7 amperes or nearly 10 times the total current discharged. The maximum long line current noted was 1.5 amperes.

Obviously the assumption upon which the calculations were made are in serious error, since the algebraic summation of the true currents must be zero, if we disregard the small net current leaving or entering the extremities of the length of pipe under consideration in the form of long line currents. It is concluded, therefore,

[1]See W. J. Muller—Transactions Electrochem. Soc. 74 (1939).

[2]See also J. M. Pearson—Preprint 81-21, Electrochem. Soc. Release, April 20, 1942.

[3]Gordon N. Scott—*Electrical News* 10 (1), 1940.

[4]Gordon N. Scott—*The Petroleum Engineer*: Part I *12* (8) 27 (1941); Part II *12* (9) 59 (1941); Part III *12* (11) 74 (1941).

that the greater portion of the electrical activity is local action.

An idea of the range of the proportionality may be gained from a calculation in which the figures previously given are used. Such calculation shows that on the average about 6% of the total measurable transverse current calculated to be flowing through the soil as a result of galvanic activity is a residual reappearing out of the plane of test as a long line current. Carrying the speculation still further, the 1.5 amperes measured as a long line current correspond to the loss of metal in the pipe line in a year of only about 30 lb. of iron, whereas local action accounts for as much as 500 lb. of iron lost in one year.

Thus it is apparent that measurements of long line currents may be totally useless as indicators of "hot spots."

General Discussion: The few data presented graphically illustrate the value of pipe-to-soil potential readings in disclosing large anodic or cathodic areas and also the general nature of the extent of the corrosion on the pipe. Referring to Fig. 1 it is clearly seen that an extensive cathodic area exists where it would likely not be profitable to apply cathodic protection. Here is a distinct practical advantage of potential readings. The entire cost of taking the readings is less than the cost of one cathodic protection unit. On the other hand, a marked anodic area is illustrated in Fig. 2 where cathodic protection is needed and, in this particular instance, was applied exactly where needed.

These measurements and especially the few data plotted in Fig. 2 show the need for practically continuous data over the pipe line right-of-way. Such a continuum of data is possible and already some such continuous data have been secured in a preliminary way.

The readings shown in Fig. 1 were actually taken with an electrode positioned over the center of the pipe. Greater demarcation in the anodic and cathodic areas would have resulted with the electrode offset from the point in the soil over the pipe, and such readings for certain purposes are much to be preferred. However, interpretation may in such instances be clouded without auxiliary measurements. Thus, the offset measurements would, if the offset is wisely selected, be especially adapted for locating areas either totally anodic or cathodic. For the intermediate areas and for other purposes the additional information provided by gradient measurements is needed.

The value of measurements of long line currents as a means of finding "hot spots" is greatly enhanced if such data are supplemented by potential readings and gradient measurements. For example, corrosion activity on lengths of pipe lines either wholly anodic or cathodic, or substantially so, or predominantly so under conditions of excessive current discharge, or length of pipe not deeply buried, may often be discovered by measurements of long line currents. However, long line currents are known to have failed to indicate corrosive areas which have subsequently developed leaks. Disclosure of such areas would certainly have resulted had gradients in detail also been taken.

From the writer's indication that the portion of the corrosive action which results in long line currents is of the order of 6 to 20% for usual pipe sizes and depths of burial, the value of insulating flanges in breaking up long line currents seems a practice of questionable value. There may certainly be places where insulating flanges are needed and may be used to economic advantage. Such a place, for example, would be at the extremities of a coated section of pipe line in a known hot spot, especially if the remaining portions of the pipe are bare or inadequately protected. Their use may also be justified in marine or transchannel lines or possibly at river crossings or other environments conducive to wholly anodic condition. But their promiscuous use in other localities on the basis of long line current measurements needs critical study.

There is a possibility of establishing a systematic process of interpretation of potential readings much after the pattern of qualitative chemical analysis. For example a few observa-

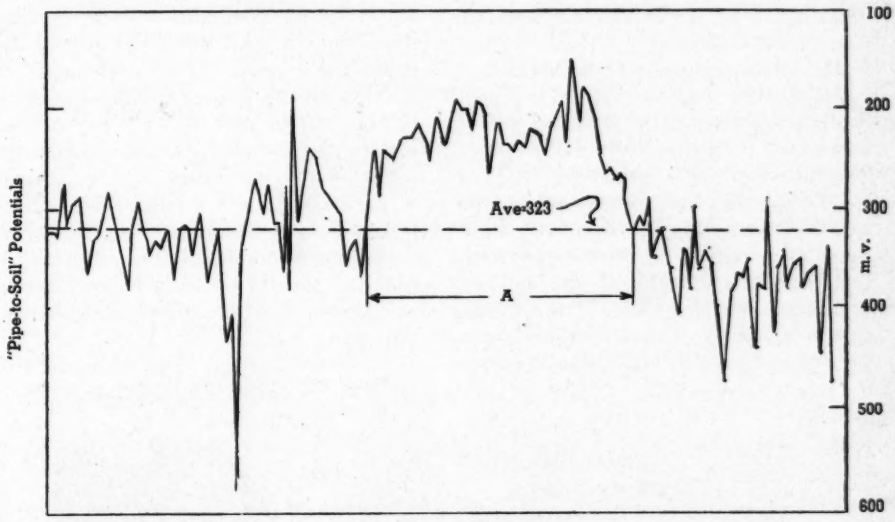


FIG. 1

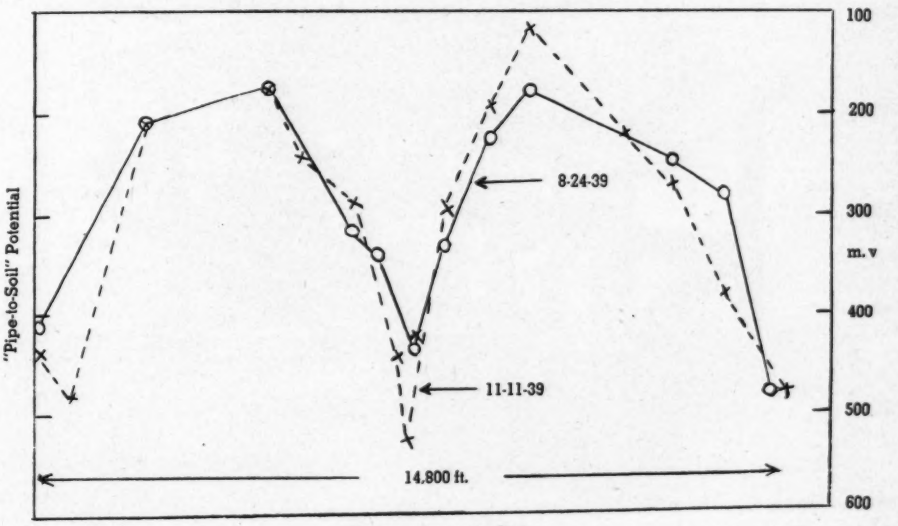


FIG. 2

tions, most of which have already been mentioned and which seem reasonably well established as facts, may be again stated for the purpose of at least quickening the reader's interest in the subject.

Low readings of potential are indicative of cathodic areas in which the pipe is not likely to suffer severe corrosion, except possibly in highly localized anodic areas which can be identified only by great detail of measurements. It is not necessary that these areas be of sandy well aerated soils as is usually supposed. The soils in the cathodic area of Fig. 1 are clay loams.

High potentials may be expected in newly laid pipe, coated pipe, in very corrosive areas, and in the presence of active bacterial corrosion. Unfortunately, high potentials may also be indicative of noncorrosive areas, but the age factor is helpful in distinguishing between the corrosive and noncorrosive case. In any event, a high potential seems to indicate a high tendency to corrode.

The intermediate potentials present the greatest difficulties in interpretation, and it is in this range that the gradient measurements are most helpful.

Glass Tube Bottoming Machine

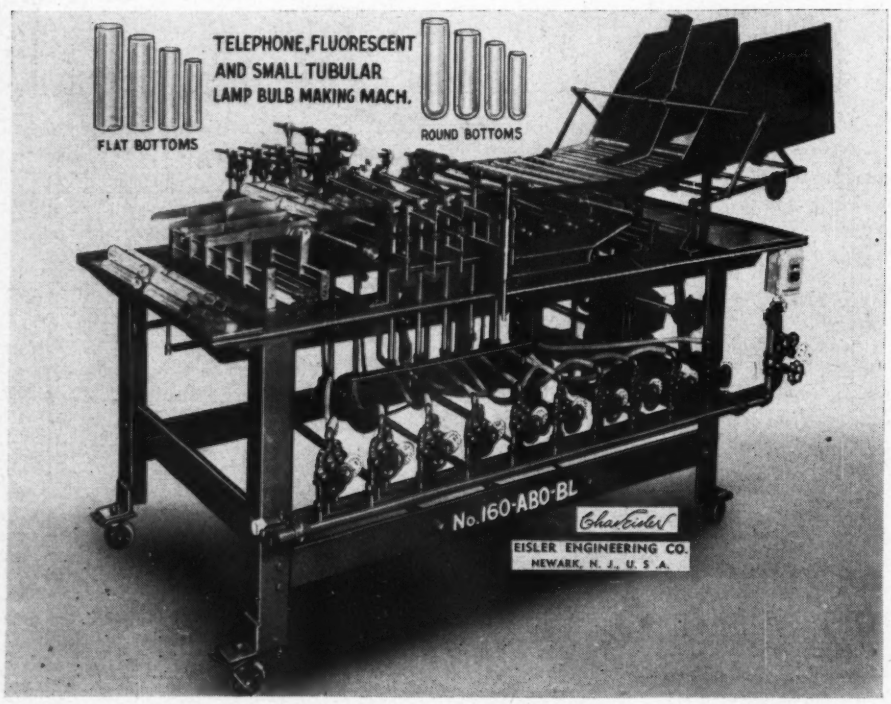
A NEW glass tube bottoming machine with improved features and wider range of work has just been brought out by the glass machinery department of the Eisler Engineering Co., Newark 3, N. J.

The glass tubing (see illustration), cut to double required length, is placed into the mechanically agitated feeder and then forwarded piece by piece. The tubes carried automatically in forward direction, and at the same time kept continually in rotation about their own axes by rollers underneath, pass an arrangement of gas burners which preheat the place of the tubing where a flat or round bottom has to be formed. Additional small rollers are provided pressing slightly on top of the tubing to hold them in proper position during the following operation of bottoming. The number of these burners depends on the outside diameter, the wall thickness and quality of the tubing. After preheating, a special cut-off burner divides the glass tubing in two pieces.

The flat bottom is then made by pressing the cut tubes gently against a preheated steel plate, called Bottomer. A special device combined with a properly shaped mould, inserted in place of the formerly used steel plate, is employed, when round bottoms are required.

After the bottom forming is accomplished a glazing process starts by employing a series of appropriate burners for smoothing the sharp edges at the open end of the tubes. Subsequently, a cooling off position is supplied before the finished double tubes are automatically discharged and delivered to a shelf. The whole mechanism including the manifold for gas, air and oxygen is mounted on a solid, welded and reinforced table structure of 90x40 in.

Each burner has a separate needle valve and mixer for setting the adequate fire. This type of machine, driven by a ½ hp. motor is adjustable for handling tubes in the range of 4 to 10-in. length and ¼ up to 2½-in. outside diameter. The production depends on the size of work and is approximately between 500 to 800 pairs of vials per hour. The required pressure for gas is 2½ to 3 lbs., for air 1 to 2 lbs. and for oxygen 2 psi. The vials are employed for manufacturing telephone switchboard lamps, fluorescent starters, miniature surgical lamps, small electronic tubes, hearing aid tubes, medicinal vials, test tubes and small tubular bulbs of all kinds.



Gas-fired glass tube bottoming machine

Northern Natural Gas Co. To Operate Argus Natural

The Federal Power Commission has authorized the Northern Natural Gas Co., Omaha, Neb., to acquire and operate all the natural gas transmission lines, gathering lines, town-border stations, and certain appurtenant properties located in southwestern Kansas and owned by its wholly-owned subsidiary, Argus Natural Gas Co., Inc.

Northern Natural proposes to continue performing the service heretofore rendered through these facilities, including delivery and sale of natural gas at wholesale to the Argus company's distribution systems and industrial and main line customers. The Argus company will retain ownership and operation of the distribution systems and facilities used to serve its industrial and main line customers.

The consideration to be paid by the applicant for the facilities to be acquired is the net book value, estimated to be $765,792.50 as of Dec. 31, 1943, to be paid by applicant returning to Argus its 4½% notes in the amount of $700,000, receipted as paid in full, and the remainder in cash. The transaction will not require any outside financing.

Superior Oil Forms Canadian Subsidiary

Superior Oil Co. of California has announced the formation of a Canadian subsidiary, and its initial acquisition of acreage in the Dominion. The subsidiary is the Rio Bravo Oil Co., holding a Dominion charter and now registered in the province of Alberta where a crown reservation of approximately 19,800 acres has been acquired. The Rio Bravo block is surrounded by the northerly section of Gulf Oil Corporation's 321,000-acre block.

FPC Simplifies Natural Gas Report Forms

THE Federal Power Commission has announced to the executives of the nation's major natural gas companies that 23 schedules need not be prepared for the annual report form (FPC form No. 2) to be submitted by such companies covering the year 1943. The Commission also modified its reporting requirements with respect to four other schedules (106, 290, 458, and the inventory of stored gas in underground reservoirs) and agreed to accept, from natural gas companies utilizing the mimeograph method of preparation, a total of 46 schedules from the annual report form for electric utilities (FPC form No. 1) for which die-impressed mimeograph stencils have been prepared to make more economical the preparation of multiple copies.

This action succeeds a similar reduction made in reporting requirements from electric utilities effected Dec. 31 and was taken in recognition of the shortage of trained personnel during the war. The reduction follows conferences with the Committee on Statistics and Accounts of the National Association of Railroad and Utilities Commissioners, of Utilities Subcommittee of the Advisory Committee on Government Questionnaires, the Bureau of the Budget, and representatives of the American Gas Association and the Edison Electric Institute. The omissions and modifications apply only to reports for 1943, and carry the same limitation with respect to the substitution of schedules from the annual report form for electric utilities.

The form of annual report for natural gas companies included in Classes A and B, as defined in the FPC's Uniform System of Accounts, designated by FPC order No. 100 as form No. 133, has been changed by FPC order No. 113 to FPC form No. 2. An original and two conformed copies of the new form must be filed annually with the Commission.

Plant Closed by Gas Shortage Resumes Operation

Operation of the United States Stamping Co. in Moundsville, W. Va., closed since Dec. 15 because of a shortage of natural gas, was resumed Jan. 3. Officials say some departments of the plant will continue to be idle. F. Steele Earnshaw, executive vice president, explains that the gas shortage still exists to a degree and it will be necessary for the operation of one large furnace to be curtailed a while longer. Earnshaw reports a six-day work week is contemplated as compared with the recent operation on a five-day schedule.

Madison Natural to Handle Turner Valley Sales

A new subsidiary, Madison Natural Gas Co., Ltd., has been incorporated by Royalite Oil Co. to handle sales of gas produced in Turner Valley to Canadian Western Natural Gas Co., Calgary. This plan will make it possible to segregate the natural gas business of Royalite from its other activities, thus facilitating new conservation measures planned by the Alberta government for the Turner Valley field.

A Range Type Clothes Drier

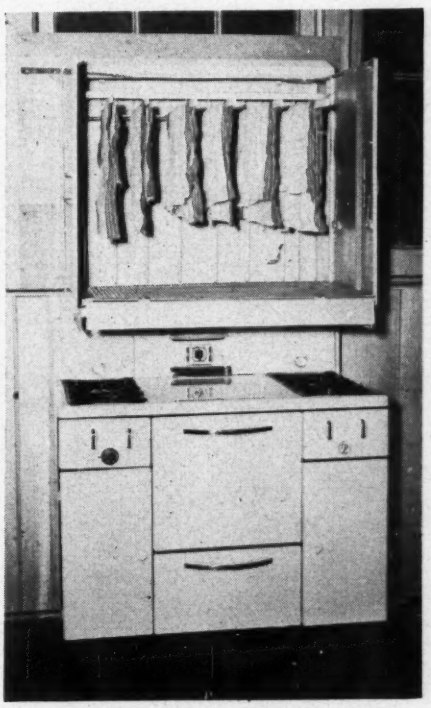
By A. L. PALMER

Engineer of Testing and Development, The Brooklyn Union Gas Company

THE problem of drying incidental clothing and fabrics, other than the weekly wash, is very real and widespread. Stockings, underwear, children's clothes—specially infants'—are washed every day in many families. Sweaters, bathing suits and other knitwear present an especially difficult problem.

At present, these articles are dried by means of various types of racks, rods and ropes, fastened to the walls or ceiling of the bathroom or kitchen. These devices are unsightly and but partially effective in the winter, when the heating plant is in operation. Drying is also done directly on the radiators. In the summer, and especially in humid and rainy weather, these methods of drying become ineffective. This problem exists in all types of residences, but is most acute in apartments where the space and facilities are more limited.

The most convenient and practical location for a drier is in the kitchen. However, floor space in the kitchen is always at a premium and none is available for a clothes drier cabinet. Moreover, kitchen wall space is being used more and more for wall cabinets. The only place left for it is the wall space above and in back of the range.



The range drier showing the cabinet open with the drier in use. There is ample space above the burners for utensils.

To meet this dilemma, a unique drier has been developed, by the author, which uses the top burners of a gas range as its source of heat. When not in use it folds back into a shallow cabinet located on the wall in back of and above the range. This cabinet looks like other wall cabinets and being only 6 or 7 in. deep, does not interfere at all with top burner cooking.

Although very compact when not in use, present models have over 20 ft. of equivalent clothes line. Drying is very rapid. This is accomplished by the movement of large volumes of air over the clothes at only a few degrees temperature rise over room air. For proper drying of fabrics, experts tell us this is the ideal condition.

Its construction is simple in the extreme, involving but three parts—a shallow cabinet, hanging rods, and a heat distributing baffle. There are no burners, no gas connection, no controls, no electric or flue connections. The cost of manufacture should be low. The drier can be installed in new or existing kitchens, regardless of size or floor space, and at no greater cost or effort than any other wall type kitchen cabinet.

There are probably many other uses which the public will find for this new appliance. It is a perfect plate warmer, and the drying of other articles, such as photographic films and prints, has already been suggested.

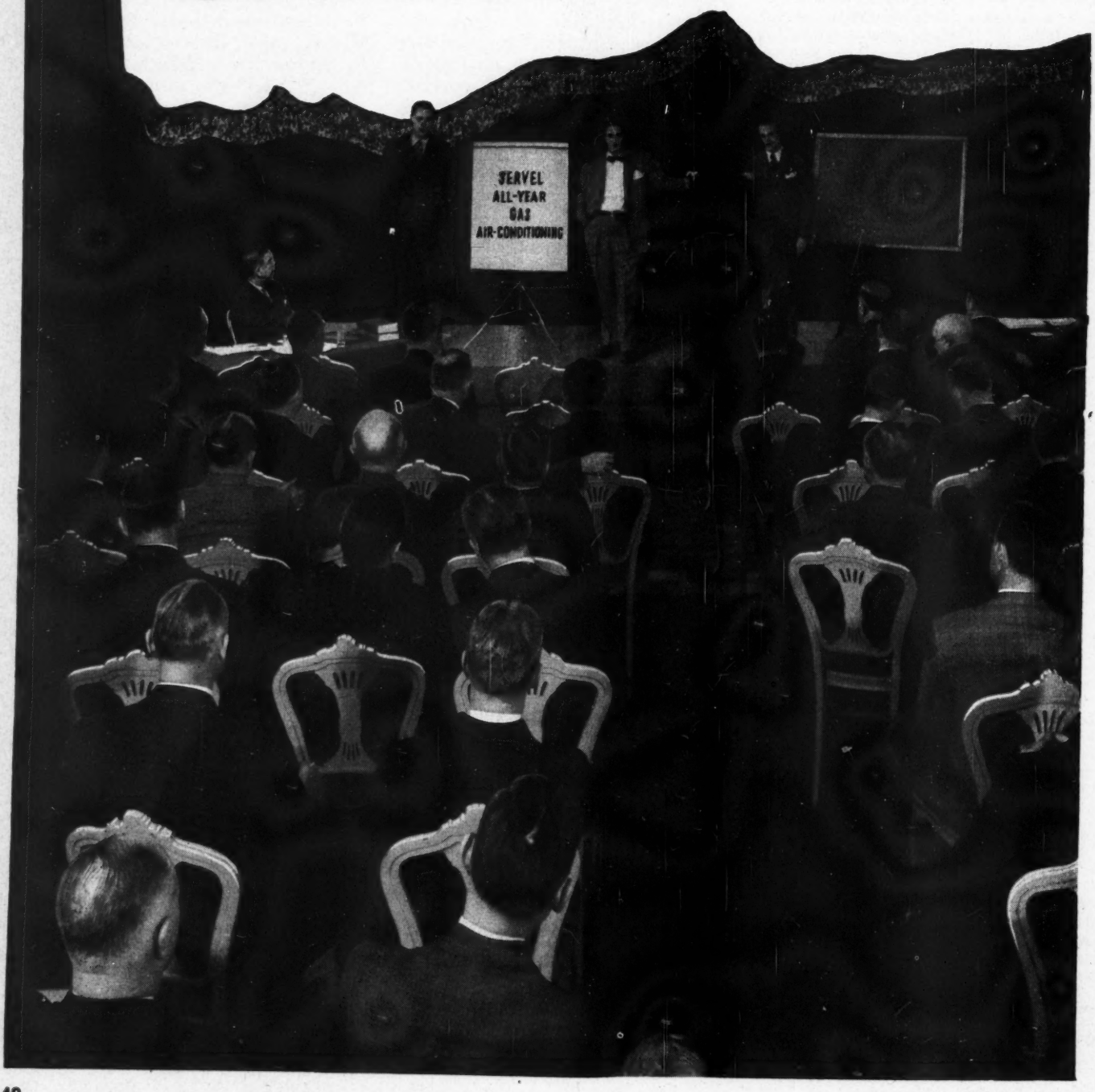
In addition to the obvious, favorable features which this new gas operated appliance presents to the gas industry, it also is a brand new idea for the home. In a highly competitive post-war period of plastic palaces and electronic what-nots, new and interesting gas applications should be of vital interest to the gas industry.

The opinions of housewives who have operated the drier are embarassingly favorable—embarassing because there are none available to sell them.

Southern Counties Dinner

The sales department of Southern Counties Gas Co. staged its 33rd annual Sales Dinner at the Mayfair Hotel in Los Angeles on the evening of January 20. The program included talks by president F. S. Wade; Vice Presidents A. F. Bridge and N. R. McKee. Clyde H. Potter, commercial manager, acted as master of ceremonies.

1200 enthusiastic Servel air conditioning



Gas Men hear story at 45 meetings

Another step in . . .

Post-war *action* ~~planning~~

Utilities take another step ahead in preparing for Post-war Gas Air Conditioning

Enthusiasm for *All-Year* Gas Air Conditioning reached a new high as a result of 45 successful two-day conferences already held throughout the country. Other meetings are still to be held. But the response accorded the meetings to date is concrete evidence of the Gas Industry's leadership in post-war action now and in its sincere desire to help provide post-war employment.

At many of the conferences, actual attendance was *greater* than original registrations! And the men not only came for the first full day of discussion, but returned the next day for more!

Running concurrently with the meetings—as an integral part of Servel's Plan of Post-war Action—is a factory school at Evansville for Gas Company engineers and service men. Here, these men receive complete instructions on sales, application, installation and service. When the course is completed, they are fully prepared to go back to their respective Gas Companies to teach their own local staffs.

Yes, *All-Year* Gas Air Conditioning is really on its way! And every Gas Company will want to take full advantage of the opportunity now presented to thoroughly educate those who will influence the sales of this equipment when peace comes—namely, architects, builders and real estate men. Now is the time to lay a solid foundation of market development for sales and prosperity after the war.

ASSOCIATIONS

AGAEM'S CP Range Campaign

A NEW program designed to help keep the advantages of gas and of CP Gas Ranges before the public, as well as to contribute toward both the war effort and post-war employment, was approved by representatives of the AGA's Domestic Gas Range Division and the Sales Management Committee of the AGAEM at the Cleveland meeting on Jan. 16 and 17.

The meeting also included a discussion of recommended changes in specifications of CP Gas Ranges. It was agreed that new specifications be revised to reflect more accurately functional rather than engineering standards.

Because of the growing importance of dealers in the distribution of gas ranges and other appliances it was decided to establish an advisory committee of retailers whose purpose it would be to help guide gas range manufacturers and utilities in their dealer relation and merchandising policy.

According to Lloyd C. Ginn, chairman of CP Gas Range Manufacturer's Sales Management Committee, the new nation-wide CP Business Building Plan is built on the theme, "You can help make peacetime jobs for service men and women by planning now to buy your new CP Gas Range with extra war bonds," and urges brides-to-be to set aside $100 to $150 in extra war bonds to buy CP Gas Ranges when new peacetime models are available.

In addition to increasing the sale of war bonds and helping to make good jobs for service men and women after the war, this program will enable gas utilities, department, furniture, hardware stores, and other gas range dealers to pre-sell gas for cooking, and to build now profitable post-war business on high quality gas ranges.

A complete kit giving full details of the CP Business Building Plan, and containing a colorful 25x38-inch window-display poster (see accompanying photograph), a unique war bond holder, bill stuffers, counter pieces, ready-to-run newspaper advertisements, stickers to be used on letters, mailing pieces and bills, publicity releases, prospect cards, etc., is available on request from the Association of Gas Appliances and Equipment Manufacturers, 60 E. 42nd St., New York 17, N. Y.

As a part of the campaign, dealers and utilities are urged to set up a Post-War Home Planning Center and to assist their customers in planning their peacetime purchases. The program also includes a plan by which every employee can become a salesman for post-war selling.

In gas appliance dealers' and gas utilities windows all over America, this colorful red, white and blue 25x38-in. window poster will help create jobs for service men and build post-war sales of gas ranges bearing the CP seal of Certified Performance.

The campaign will be supported by direct mail and publicity programs, newspaper advertising and trade paper advertising in the department store, hardware, furniture, appliance dealer and gas utility fields.

Unique in the major appliance merchandising field, the Certified Performance Gas Range was introduced in 1938 to provide uniform cooking performance standards. Gas ranges bearing the CP Seal are built by individual range manufacturers to meet high performance specifications drawn up by engineers and home economists of the entire gas industry.

Merchandise leaders agree that the CP program substantially increased the sale of better quality gas ranges and changed gas range buying from "buying for price to buying for cooking performance." CP specifications now being formulated for post-war homes, are being based on field studies made among more than 1,500,000 gas customers, gas appliance dealers, architects, builders and gas utilities in all parts of the country and on engineering and home economic studies being conducted by range manufacturers and gas utilities.

Gas range manufacturers now sponsoring the CP program include: A-B Stoves, Inc., American Stove Co., Caloric Gas Stove Works, Clare Bros. & Co., Cribben & Sexton Co., Detroit-Michigan Stove Co., the Estate Stove Co., Glenwood Range Co., Grand Home Appliance Co., James Graham Mfg. Co., Hardwick Stove Co., Moffats, Ltd., O'Keefe & Merritt Co., Roberts & Mander Stove Co., Geo. D. Roper Corp., Standard Gas Equipment Corp., Tappan Stove Co., Western Stove Co., Inc.

PCGA Plans 16th Annual Advertising Drive

THE cooperative advertising program of the Pacific Coast Gas Association will be continued in 1944, the 16th year of continuous effort in behalf of gas fuel and gas appliances. The committee in charge is composed of F. M. Raymond, San Diego Gas and Electric Co., chairman; D. L. Scott, Southern California Gas Co., and R. R. Gros. Pacific Gas and Electric Co. The Knollin Advertising Agency will continue to handle the account. The schedules include contracts with the following journals:

Domestic Media:
- Sunset Magazine
- California Federation News
- California Parent-Teacher
- Parent-Teacher Journal
- Parent-Teacher Courier

Dealers:
- Western Plumbing & Heating Journal
- Western Home Furnisher

Architects and Builders:
- Architect and Engineer
- Building Contractors Forum
- Building Standards Monthly

Commercial Cooking:
- Pacific Coast Record
- Western Hotel and Restaurant Reporter
- Keeler's Pacific Hotel and Restaurant Review
- Western Baker

Manufacturers:
- Western Metals
- GAS Magazine

PCGA Holds Utilization Round Table Meeting

The Pacific Coast Gas Association held a round-table utilization meeting under the direction of Committee Chairman Carl A. Renz, manager, customer service department, Southern California Gas Co., in Los Angeles Jan. 26 and 27. Emphasizing informal discussion by small groups of specialists, this type of meeting has been most successful ever since its adoption by Managing Director Clifford Johnstone with the advent of the war.

Experiences and observations were exchanged on the subjects of winter-summer air conditioning, curtailment of surplus gas customers during shortage periods, effects of reduced service policies, limitation of free appliance service, employee training, improvements in utilization equipment, feasibility of water heater insurance, and a number of other pertinent utilization problems.

A down-to-earth analysis of the Servel winter-summer unit was a particular feature. (See Page 51.) Another topic of considerable interest was the experience of one manufactured gas company in contacting 7000 house heating customers in a five-hour period by telephone during an emergency shortage. Lack of present service and the effect that it will have on appliances and the attitude of the gas consumer in the post-war period was an unanswered question. Problems in customer education were brought to the fore, one company having a particularly successful experience along this line.

The meeting was attended by executives from Portland, San Francisco, San Diego, and Los Angeles.

IOCC Spring Meeting

The spring meeting of the Interstate Oil Compact Commission will be held March 31 and April 1 at New Orleans, La. These dates were selected at a meeting of the executive committee of the organization at Oklahoma City, Okla., Jan. 22.

Governor Andrew W. Schoeppel of Kansas is chairman of the Compact; Charles Orr, secretary, and E. G. Dahlgren, technical secretary, both of Oklahoma City. Place of the spring meeting was selected at the winter meeting at Wichita, Kan., Dec. 10-11, 1943.

Joseph L. McHugh, director of the Louisiana department of conservation was appointed chairman of the arrangements committee for the New Orleans meeting.

AGA War Conference Objectives Announced

Charles G. Young, chairman of the 1944 AGA War Conference on Industrial and Commercial Gas to be held on March 30 and 31 in Rochester, N. Y. (see Page 53, January, 1944, GAS), has announced the following objectives of the Conference:

1. To study equipment and practices in gas utilization in war production plants and military camps and bases so that improvements can be applied wherever they will help the war effort;

2. To study the requirements of altering or replacing old industrial gas equipment in war plants and to rehabilitate commercial equipment during the reconversion period.

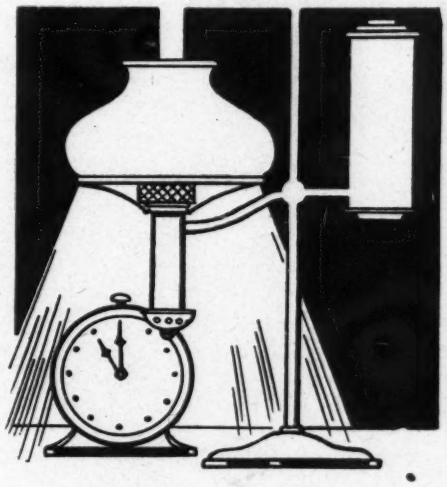
3. To plan for maximum industrial and commercial gas and equipment sales in the post-war period.

The program committee for this conference, under the chairmanship of Ivar Lundgaard, Rochester Gas & Electric Corp., consists of R. Victor Bauer, Ebasco Services, Inc.; Karl Emmerling, The East Ohio Gas Co.; Henry M. Heyn, Surface Combustion; F. B. Jones, Equitable Gas Co.; Ralph L. Manier, Central New York Power Corp.; James C. Patterson, Carrier Corp.; Leo Sullivan, Rochester Gas & Electric Corp.; Eugene D. Milener, American Gas Association; and Charles G. Young, Springfield Gas Light Co., ex officio.

SCMA January Meeting

The regular monthly meeting of the Southern California Meter Association took place at the Rio Hondo Country Club, Downey, Calif., on the evening of January 20. The program for the meeting was built around a discussion of the selection, use and maintenance of regulators. Frank Renner, American Recording Chart Co., program chairman, opened the discussion with comments on the general principles involved in the use of regulators.

The Meter Association's annual Hi-Jinks will take place on the evening of Saturday, February 19.



FOR THE DURATION

...and after

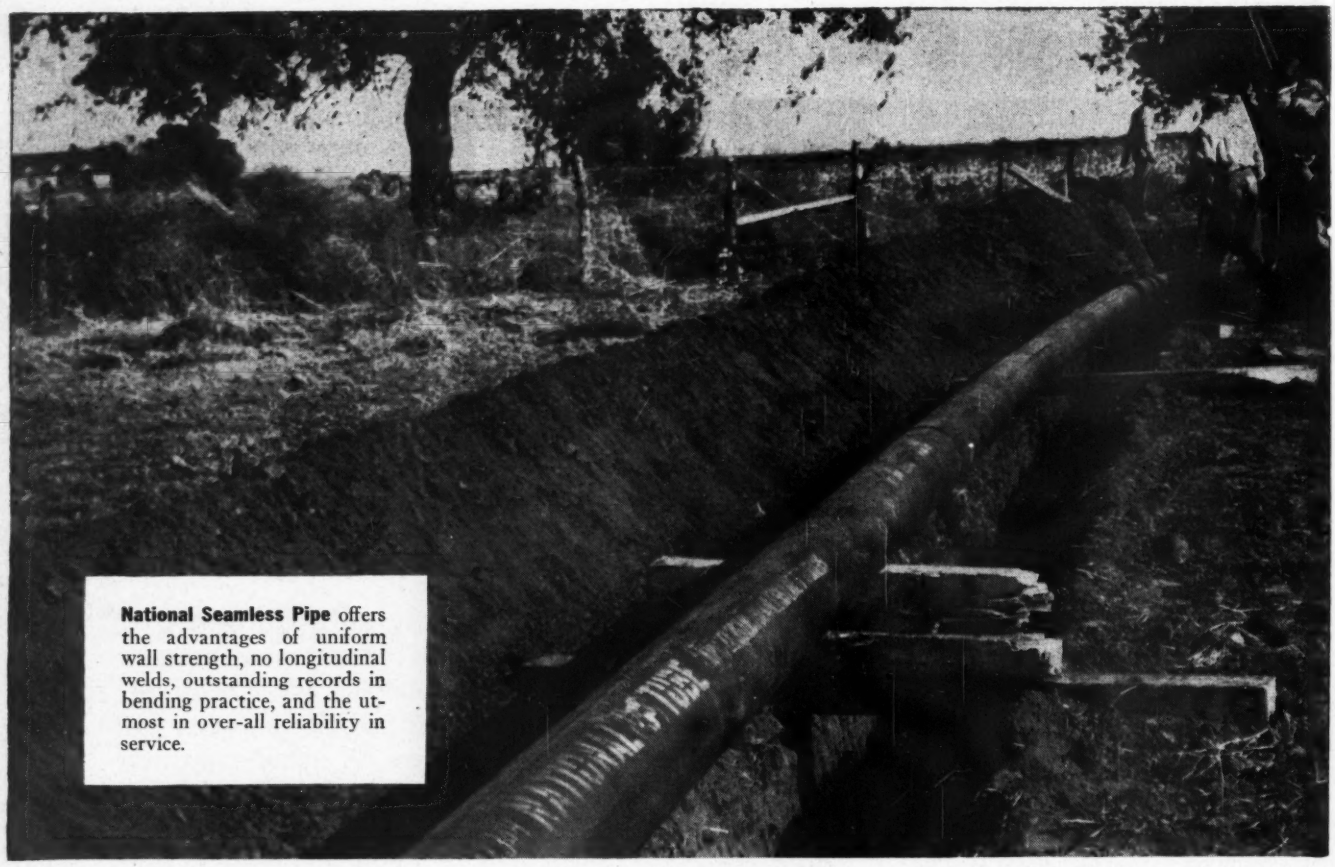
Automatic controls are playing an important role in the war effort. Since Pearl Harbor, all of our engineering skill and plant facilities have been devoted to the production of automatic controls for the machines of modern warfare. We shall continue to give our all to this essential job. ¶ After victory. is won, automatic controls will again help raise the high American standards of living and production efficiency. We shall be ready, with war-taught experience, skills and methods, to resume our leadership in the development and manufacture of automatic pressure, temperature and flow controls.

GENERAL CONTROLS A-100 automatic switch type thermocouple pilot is designed for pilot generator operation. Functioning on the thermocouple principle, the A-100 provides complete, safe control in the event of pilot-flame failure. For domestic and industrial gas applications.

GC

America's ace in the hole ★

our network of pipe lines



National Seamless Pipe offers the advantages of uniform wall strength, no longitudinal welds, outstanding records in bending practice, and the utmost in over-all reliability in service.

THE man who burns gas in his factory or home furnace has a smile on his face today. So far he has been able to get an adequate fuel supply.

Gas is already pinch-hitting for other fuels on the industrial front and will probably continue to keep the home fires burning even if a scarcity of other fuels should exist. Chief reason for the favorable position of the gas industry is the network of big pipe lines which were constructed during the past two decades.

Long before the present period of heavy requirements, the progressive gas industry had been building up a demand for bigger and better pipe. Early in the expansion program, National Tube Company, alert to the trend, was ready with seamless in sizes up to 24 inches, the only company in the country with manufacturing facilities for turning out this big pipe and in large quantities.

Today, everyone realizes the war value of the nation's submarine-proof pipe lines. But the gas industry deserves credit for having the foresight to build many lines during peace times . . . and the major portion was seamless pipe.

These lines have truly proved an ace-in-the-hole for maintaining war production at peak capacity.

Steel needs scrap NOW . . . *Send it in!*

NATIONAL TUBE COMPANY

PITTSBURGH, PA.

Columbia Steel Company, San Francisco, *Pacific Coast Distributors* · United States Steel Export Company, New York

WALLS WITHOUT WELDS

UNITED STATES STEEL

AGA Bulletin No. 20 to Cover 100% Primary Air Burners

NEW and valuable data on design and application of gas appliance burners will be presented in Research Bulletin No. 20, shortly to be released for publication by the Committee on Domestic Gas Research of the American Gas Association. Extensive study has been devoted to the fundamentals of the burner design as a part of the extensive Domestic Gas Research program now in progress at the Association's Laboratories. Three research bulletins previously published covered conventional Bunsen type burners. Those utilizing all air needed for combustion as primary air are now similarly treated.

Chief among the advantages of the burners discussed in this bulletin are reduced combustion space, greater heat liberation and higher rate of heat transfer. Design features which will best accomplish desired results are fully discussed. These apply to burners operated on low gas pressures commonly employed, as well as those supplied for use under higher pressures.

A chapter is devoted to performance of various small burners employing all air as primary air. These are considered from the standpoint of their application to gas range top sections. They should be capable, however, of application to other types of domestic gas appliances as well. Experimental results clearly show possibilities of high efficiencies and good heat distribution. For gas range application particularly, the advantages offered by the use of such burners deserves special attention.

North Shore Gas Co. Men Win Life Saving Medal

For heroic action in saving the life of a woman who had been overcome by gas, two employes of the North Shore Gas Co., Waukegan, Ill., William L. Magden, fitter, and Walter H. Dietmeyer, shop foreman, were awarded the McCarter medal and Certificate of Assistance respectively by the AGA.

A. W. Conover, president of the North Shore Gas Co., made the presentation of the McCarter medal to Magden, while Dietmeyer received the McCarter Certificate of Assistance from Harold W. Dunn, safety director.

Fire Loss From Gas Is Low

National Fire Prevention Association's department of fire statistics showing reasons for fire loss in the United States indicate that gas and gas appliances are responsible for relatively few fire losses. Smoking and matches top the list of causes, with electricity and electrical appliances and motors next. Of an estimated $315,000,000 fire loss from all causes in 1942, only $2,500,000 loss was caused by gas.

Pipe Line Company Assumed By Michigan Consolidated

American Michigan Pipe Line Co. ceased existence on Dec. 31, 1943, and its assets and liabilities have been assumed by Michigan Consolidated Gas Co., with main offices at 415 Clifford St., Detroit 26, Mich.

Technical Conference Program Set

THE program for the AGA Technical Conference on Domestic Gas Research in Cleveland, Ohio., on Feb. 17, has been completed. The first day will be given to general sessions; the second day to panel sessions on particular subjects. The general subjects chosen for papers and discussion are:

The technique of advancing atmospheric gas burner designs—Mixing tubes, burner ports and flame characteristics.

The technique of advancing atmospheric gas burner design—Optimum volume and noise extinction characteristics.

Noise and heat transfer factors in the design of gas heating appliances.

The relationship of fundamental research to gas appliance development.

Practical phases of fundamental gas cooking research—Top sections.

Practical phases of fundamental gas cooking research—Ovens and broilers.

Fundamental gas water heating research —Efficiency aspects.

Design and performance features of post-war gas burners—Aerated flames.

Design and performance features of post-war gas burners—Non-aerated flames.

Fundamental gas water heating research —Combustion aspects.

The panel sessions, conducted by the Technical Advisory Sub-committee will be on gas cooking, gas water heating, and central gas space heating.

The AGA Testing Laboratories will have an operating exhibit at the Hotel Statler during the conference; this exhibit will present certain new ideas concerning burners and burner performance, aeration, ignition, venting, etc. In addition, the AGA Laboratories at 62nd St. will be open for inspection on Saturday morning after the conference, with members of the staff available for consultation with those registered at the Research Conference.

A similar Technical Conference, in cooperation with the Pacfic Coast Gas Association, will be held at the Ambassador Hotel, Los Angeles, Calif., on March 15 and 16. Demonstrations of research will be given at the Ambassador during the conference and at the Pacific coast branch of the AGA Laboratories the morning after the conference closes.

Calendar

February

AGA Technical Conference on Domestic Gas Research—Statler Hotel, Cleveland, Ohio, Feb. 17-18.

March

AGA West Coast Technical Conference on Domestic Gas Research—Ambassador Hotel, Los Angeles, Calif., March 15-16.

Southern Gas Association Convention —Roosevelt Hotel, New Orleans, La., March 22-23.

NEGA Annual Meeting—Hotel Statler, Boston, Mass., March 23.

AGA War Conference on Industrial and Commercial Gas—Hotel Seneca, Rochester, N. Y., March 30-31.

Interstate Oil Compact Commission Spring Meeting—New Orleans, La., March 31-April 1.

April

Mid-West Gas Association—Fort Des Moines Hotel, Des Moines, Iowa, April 5.

National Association of Corrosion Engineers—Rice Hotel, Houston, Texas, April 10-11-12.

Missouri Association of Public Utilities—Jefferson Hotel, St. Louis, Mo., April 19-20.

June

Southwestern Gas Measurement Short Course—University of Oklahoma, June 6-7-8.

SEC Appoints Assistant To Coordinate Research

IN ORDER to coordinate and correlate diverse research and statistical studies and surveys being made independently by its three division—public utility, trading and exhange and corporation finance—SEC has recently appointed Leslie T. Fournier as special assistant to the commission.

Mr. Fournier was formerly in charge of statistical work for the public utility division. In his new position he will work under the direct supervision of Ganson Purcell, chairman.

The move will prevent overlapping and duplication of effort, and will also help meet the manpower shortage which is as serious a problem with the commission as with any of the corporations or accounting firms with which it deals.

Mr. Fournier will suggest reports and studies to the commission as well as to divisions, but in the latter case they will be in an advisory capacity as each division will continue to initiate and develop its activities independently. He will also prepare the commission's annual report to Congress and reports and studies which may crop up in connection with prosecution of war, such as finance corporation activities as they affect the commission, post-war problems, economic studies and the like.

The commission has been working closely with various Government agencies since the outbreak of the war, with Ganson Purcell as liaison officer. Some of the problems relating to the war are reported upon informally by the commission for the benefit of various service and economic agencies of the Government in Washington.

CANADIAN WAR INDUSTRY USES GAS

In shell manufacture for:

Cutting billets to size by heat methods.
Heating billets to be hot forged.
Heating rough-turned shells preparatory to "hot nosing."
Heating degreasing tanks for removal of oils, coolant compounds, etc.
Drying copal varnish on shell cavity.

In turning out armor plate for:

Batch and continuous normalizing, annealing, hardening and drawing furnaces.

In making gun barrels and jackets for:

Special-type soaking pits to hold ingots at elevated temperature before forging.
Reheating furnace operations in intermediate stages of forging.
Turning out finished forgings in annealing furnaces.

In manufacturing springs to:

Heat stocks for winding large recoil gun springs.
Anneal stocks for cold wound springs.
Harden precision springs (in prepared atmosphere furnaces) of a type with which surface treatment cannot be performed after hardening.
Operate continuous drawing furnaces.
Turn out small batch springs made in pot-type cyanide furnaces.

In making gun mounts for:

Hot stamping, drawing, hardening of every size and weight of material from ounces to tons per piece.

In manufacturing ceramics for:

Drying and firing cantonment dishes, medical ware, vitrified sewer crock, high voltage insulators.

In making other items:

Radio and radar tubes, special electric bulbs, armature drying, specially prepared purging atmospheres.
Special drying ovens for poison gas detection sheets, special radiant burners for cooking synthetic varnishes and oils.
Special pot furnaces for melting and controlling die cast metals and battery plate manufacture.

Gas Aids Canadian War Effort

By R. W. CLARKE, GAS Correspondent

THE Canadian gas industry has done and is continuing to do an important war job. And now, as is the case in many another business field, gas producers in the Dominion—and this applies to producers of both natural and manufactured gas—are turning their attention to post-war planning.

Many important new applications for gas have been worked out in wartime. From the manufacture of optical glass to the welding of airplane joints, gas is providing an important means of production for war in Canada. Part of the reconversion job will be to adapt new processes and equipment to peacetime work. This is a task which now is occupying the attention of an eight-man committee formed by the Canadian Gas Association.

Under the chairmanship of J. D. von Maur, distribution engineer of Consumers' Gas Co. of Toronto, Ontario, this committee is representative of natural, mixed and manufactured gas producers. It is working closely with a similar committee of the American Gas Association, which has been making extensive inquiries into the post-war gas situation.

Canadian authorities admit that research work is much more advanced in the United States than in Canada. But because of the mutual aid policy, and because American problems are similar to a great degree to those facing Canada, the Canadians expect to benefit greatly from the fact-finding of the AGA committee.

Indiana Utilities Corp. Acquires Added Pipe Line

Negotiations have been completed for the purchase of the physical assets of the Kentucky Pipe Line Co. of Indiana by the Indiana Utilities Corp. These assets consist of a compressor station located some four miles south of New Middletown, Ind., and seven producing gas wells and pipeline from which the compressor draws gas.

In order that the Indiana Corp. may secure additional gas to supply the service needed, it has also acquired an 8-in. gas line and pipeline connecting the compressor station with the Louisville Gas & Electric Co.'s system in Louisville.

Approval of the transaction has been granted by the Public Service Commission of Indiana, and it is expected that the FPC will approve it shortly.

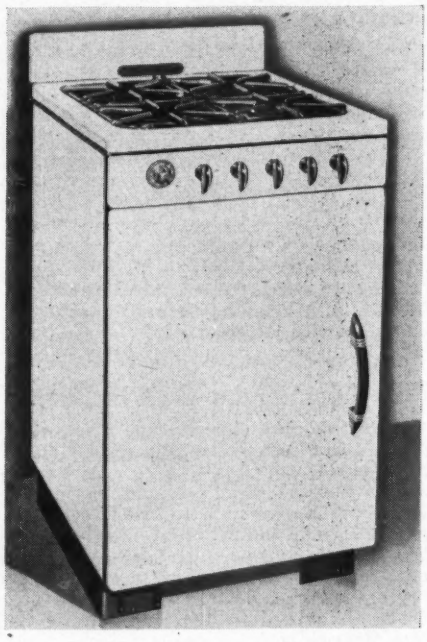
Security Retirement Plan Filed by Cities Service

A plan for retiring all the outstanding debentures and preferred stock of Cities Service Power and Light Co., following completion of its sale of all interest in the Public Service Co. of Colorado, has been filed with the Securities and Exchange Commission. The plan proposes to "take out" all public holders of securities by payment of the debenture indebtedness and preferred stock in cash at par, thus leaving the Cities Service Co., parent concern of Cities Service Power & Light, as sole owner of controlling securities interest in the subholding firm. Also involved in the plan is the exchange of certain other securities for debentures and preferred stock of Cities Service Power & Light, owned by the parent firm, Cities Service Co.

The proposed transaction will leave the Cities Service Power & Light Co. with no securities outstanding except common stock owned by the parent organization, and a proposed bank loan secured by holdings in the company's operating subsidiaries.

American Stove Resumes Range Production

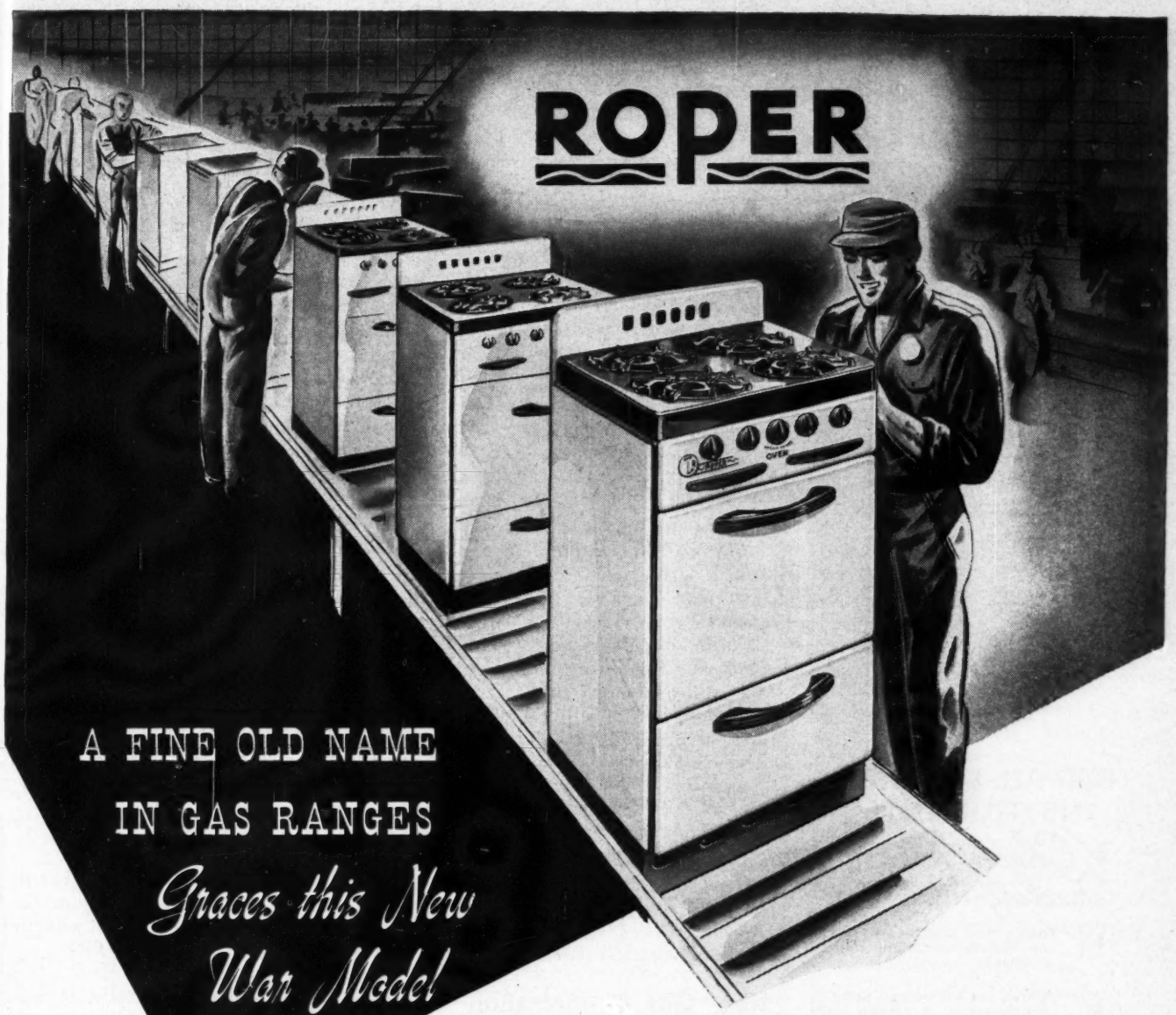
American Stove Co., on or about February 1, will resume production of gas ranges at its Harvey, Ill., plant. This plant will manufacture the new model range permitted by OPA, according to S. E. Little, American Stove's vice-president in charge of sales. This model 7701-30, will be a practical range from the cooking efficiency standpoint. Most of the Magic Chef pre-war features will



American Stove, War Model

be built into it, including the Red Wheel Regulator, automatic top lighter, 16-in. oven, full insulation, 3-in-1 Magic Chef top burners and porcelain enamel finish. It will have standard size oven, broiler and cooking top facilities.

All of the firm's other plants are continuing 100% in war work.



● Some of [illegible]illed craftsmen at Roper are turning once again to the kind of work they had done for years before the war—manufacturing Roper gas ranges.

These gas ranges are available for you to sell to those who have no cooking equipment or whose cooking equipment is beyond repair. Roper is pleased to lend its efforts to this governmental desire.

Complete with many modern features, the new Roper gas range, now coming down the assembly lines, provides an oven, broiler and top-of-range cooking service. The range can be purchased through the surrender of Stove Purchase Certificates in accordance with provisions of the Stove Rationing Program.

Remember—this gas range bears the name Roper.

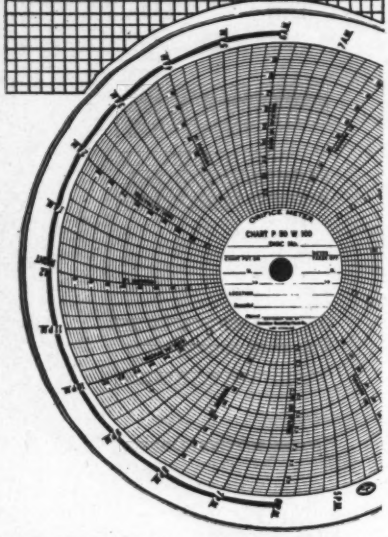
GEO. D. ROPER CORPORATION, Rockford, Illinois, manufacturer of ROPER, "America's Finest Gas Range," for all gases including L. P. (Liquefied Petroleum) gas.

ROPER
GAS RANGES

THE FLAME THAT WILL BRIGHTEN YOUR FUTURE

★ ★ ★ SELL WAR BONDS NOW ★ THE ROPER (gp) GAS RANGE LATER ★ ★ ★

ARCCO
Accurate
CHARTS



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TRENDS AND COMMENT

Tomorrow's Kitchen

McCall's Magazine, which is currently conducting a Kitchen Contest, has sent us a preview of the final results compiled from sampling the 200-word comments required of contestants.

1. The glass oven, not a peep hole of glass, in the kitchen range gets the biggest hand from all voters. (We invite comments from range manufacturers.)

2. As to refrigerators, no glass doors are wanted. Chief complaint is aimed at the deep, hard-to-get-at refrigerator. Over two-thirds voted for a shallower, wider, higher refrigerator with four doors and separate compartments for frozen foods, ice cubes, dry cold and moist cold.

Announcement will be made of the final returns and tabulations on the Kitchen Contest as soon as they are available.

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Keeping the U. S. Army air forces warm, aground and aloft, is a new self-powered, automatic warm air furnace, the size of a suitcase, and weighing only 45 lbs. It will heat a normal size single family home.

New Gas Organization

For the specific purpose of representing the natural gas industry before legislative and administrative bodies and for the general purpose of promoting the welfare, progress and development of the industry, representatives of a number of natural gas producers and pipeline companies met in Kansas City on Jan. 11 and approved the organization of a non-political, non-profit trade association, the Independent Natural Gas Association of America.

John Yost, Panhandle Eastern Pipe Line Co., and the Corporation Trust Co., Wilmington, Dela., were authorized to prepare and file the papers of incorporation. Fifteen directors were selected to serve as follows:

1. *For the period ending in November*, 1944: A. B. Harper, president, Arkansas-Oklahoma Gas Co.; C. H. Zachry, vice president, Southern Union Gas Co.; P. R. Johnson, President, Union Gas System, Inc.; R. L. Carr, president, Columbia Carbon Co.; W. G. Skelly, president, Skelly Oil Co.

2. *For the period ending in November*, 1945:L. E. Ingham, vice president, Kentucky Natural Gas Corp.; E. C. Joullian, president, Consolidated Gas Utilities Corp.; M. H. Adams, treasurer, Stevens County Oil and Gas Co.; Oscar Nelson, president, United Carbon Co.; J. H. Dunn, vice president, Shamrock Oil and Gas Corp.

3. *For the period ending in November*, 1946: Joseph Bowes, president, Oklahoma Natural Gas Co.; Paul Kayser, president, El Paso Natural Gas Co.; E. Buddrus, president, Panhandle Eastern Pipe Line Co.; W. H. Wildes, president, Republic Natural Gas Co.; D. D. Harrington, Hagy, Harrington & Marsh.

Following incorporation, the association will hold its first meeting to elect a president, vice president, treasurer, and executive secretary. The officers will appoint an executive committee of at least five members.

Members will be drawn from practically all sections of the country. Applicants must be (1) operators of natural gas pipelines; (2) natural gas producers; or (3) natural gas royalty owners.

Coal Industry Research

The National Coal Association, through its affiliate, Bituminous Coal Research, Inc., has approved a further research program of $500,000 a year for a five-year period. Most of the work will be done at Battelle Memorial Institute, Columbus, Ohio. Among the objectives of the program are the perfection of smokeless combustion, the development of automatic stokers, more efficient furnaces, the conversion of coal to gas, the hydrogenation of coal, and the further development of "fluid coal" firing.

Taxation Trends

The tax experts of the city of Detroit have sharpened their pencils and come up with a 20% tax on gross revenue earned within the municipal limits by gas, electric, and steam utilities. The ordinance, adopted Nov. 30, became effective Dec. 31, and was made retroactive to Jan. 1, 1943. Smaller surrounding municipalities quickly caught on, enacted similar measures.

Intent of the action was to drain into local coffers money tabbed for Federal Excess Profit taxes. Actual effect, in the case of the Detroit Edison Co., if the ordinances are valid for 1943, would be to reduce net in-

come of the company by $2,000,000. Hazard is seen also in the fact that municipal taxes, once enacted, have a tendency towards Gibralterish permanency, while business men generally are looking forward to the demise of excess profits with Hitler and Hirohito.

State legislation, also, has broadened its viewpoint towards special utility taxation, four states passing new utility taxes in 1943:

1. North Carolina—a 3% tax on gross earnings from all sources of companies operating freight car lines, the tax replacing all other ad valorem taxes.

2. Oklahoma—a 2% gross receipts tax on rural electric cooperatives, the tax replacing all other taxes imposed by state or local governments.

3. Oregon—a 2% tax on gross earnings of associations and cooperatives distributing and selling electrical power.

4. Wisconsin—an excise tax of 7c per Mcf. of natural gas consumed. (See Column Two.)

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Planning to provide employment for his employees post-war, John B. Hawley, Jr., head of Northern Ordnance, Inc., manufacturers of naval gun mounts, has made an enviable record as an oil and gas wildcatter in the Southwest. In the first 11 *months of* 1943, 88 *test wells were drilled, resulting in* 21 *oil and gas producers.*

Something Done

Having been caught in the swirling torrent of words anent the future of air conditioning, we were glad to come up for air and to learn, upon attending a recent PCGA meeting, that something is being done about it.

Southern California Gas Co. has 34 of the new Servel units on its lines. During the past two years a thoroughgoing analysis and study of these units —their design, construction, cost, acceptance, servicing, and performance —has been carried out. The results were reported at the meeting.

While it is not appropriate to go into detail on the findings, we can say that the data collected will be of great value to the manufacturer in perfecting the appliance. Enthusiasm in Southern California for this new and leveling load is running high, the plan seeming to be to establish a beachhead in the commercial field before fanning out into the domestic market.

One or two other manufacturers have produced winter-summer units. To Servel, however, goes the gold medal award—they were the "fustest with the mostest."

Illustrative of the AGA Testing Laboratories' contribution of manpower to the armed services is this picture showing a visit of former AGA Laboratory engineers to the Cleveland quarters. **Lieutenant R. B. Kleinhans** (left) and **Lieutenant Commander J. B. Heinicke** (right) are shown discussing recent development with **K. H. Flint,** assistant chief research engineer. Both naval officers are now instructors in chemistry, physics, and electrical engineering at the United States Naval Academy at Annapolis.

Natural Gas for Wisconsin

Natural gas may soon cross the Illinois-Wisconsin state line for the first time as the result of a decision by the Wisconsin State Supreme Court handed down Jan. 18 that the Wisconsin Railroad Association and the Wisconsin Coal Bureau had no right to object to the construction of 10-mile pipeline from Lake Geneva to the Illinois state line to connect with the transmission facilities of Natural Gas Pipeline Co. of America. Permit to build the line was granted the Southern Wisconsin Gas Co. by the state's Public Service Commission.

The opinion, handed down by Justice Oscar M. Fritz, stated that the state commission did not violate FPC authority since the permit was granted to an existing intrastate utility seeking to provide better service to its patrons under state law. It reversed an earlier decision overruling the commission's demurrer to a complaint by the two associations.

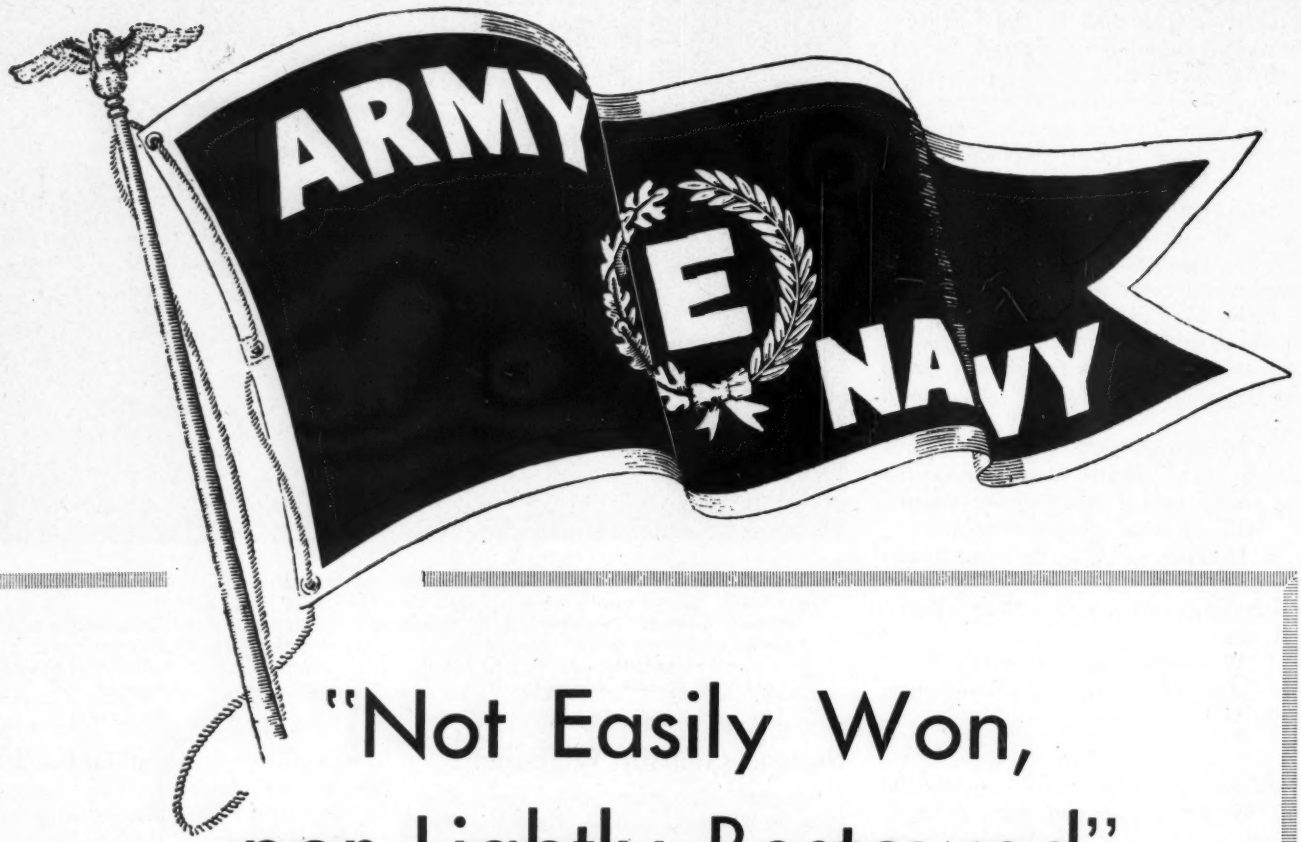
Natural gas in Wisconsin has long been the subject of much legal and regulatory action. Combinations of coal, railroad, and labor interests have effectively blocked efforts to pipe gas across the Illinois-Indiana state line. In 1943 the legislature sought to impede entrance of natural gas by imposing an excise tax of 7c per Mcf. of natural gas consumed and provided a further hurdle by requiring consent of the municipal governing body before the gas could be piped into any Wisconsin city.

Survivor in a three-company effort to serve this area is Natural Gas Pipeline Co. of America. This company which serves the Chicago area with gas from the Texas Panhandle sought to extend its service into Wisconsin in early 1941 with the construction of a 165-mile 20-in. line from the company's Geneseo compressor station on the main Texas-to-Chicago line to Milwaukee. Only a portion of the line, to the Illinois-Wisconsin state line, was completed. (GAS, Dec. 1940, p. 13.) The 10-mile Southern Wisconsin line would connect with the northern terminus of this line.

The other two gas transmission companies involved were the Western Natural Gas Co., which proposed a long distance carrier from Kansas gas fields and the Independent Natural Gas Co. (a Phillips Petroleum subsidiary), which sought to bring gas through a proposed 877-mile, $28,000,000 line from the Texas Panhandle.

Originally the FPC granted a certificate of public convenience and necessity to Independent Natural, and this in spite of the fact that Natural Gas Pipeline was already at Wisconsin's door. Following this action, Western Natural dropped out of the picture. Because of the political obstructions in Wisconsin and later the limitations that came with war the Independent line was never started.

The way was further cleared for Natural Gas Pipeline on Jan. 6 when the FPC granted, without prejudice, Independent's request for the withdrawal of its application on the grounds that construction of their line



"Not Easily Won, nor Lightly Bestowed"

The men and women of the Lattimer-Stevens Company deeply appreciate the honor of having achieved the Army-Navy "E" Award for EXCELLENCE in WAR PRODUCTION.

The Army-Navy "E" pennant over our plant will inspire this organization to even greater efforts to win the battle of production and speed the day of final Victory.

THE LATTIMER-STEVENS COMPANY

COLUMBUS, OHIO

was currently impractical. In the application, which was filed Feb. 28, 1942, Independent proposed to sell gas at wholesale to 10 distributing companies in southern and eastern Wisconsin.

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According to R. L. Hartford, associate editor of Steel, the "replacement demand for cooking ranges, including gas, electric, coal, and wood, for the period 1942 *to* 1950 *is estimated at* 17,587,272 *units. New markets in the period should provide an additional* 4,064,728 *units, making the full potential market for the period* 21,652,000 *units."*

No Refrigerators Yet

The date on which such important war industries as those which formerly produced domestic mechanical refrigerators and similar heavy consumer goods may resume civilian production cannot be determined now, Charles E. Wilson, executive vice chairman of WPB, told members of the Domestic Mechanical Refrigerator Industry Advisory Committee Jan. 22.

"Our Army and Navy face what is probably the most perilous undertaking in military history," he emphasized. "Industry must be kept flexible, so that it will be able to meet the requirements for increased war production that may result from impending military operations. Until the outcome of what lies ahead becomes clear—and there is no way of telling when that will be—production of domestic mechanical refrigerators cannot be resumed."

Canadian Regulations

A new set of regulations, brought down in mid-January by the government of Premier E. C. Manning, now governs development and drilling for natural gas and petroleum in the Canadian province of Alberta.

Under these regulations, a cash deposit equivalent to a rental of $1 per acre must be placed in the custody of the Provincial Department of Lands and Mines to guarantee an expenditure of this amount in actual work on the property involved.

Provision is made for the cash deposit to be released as work progresses and expenditures are made, but the person having the reservation, in making request for release of the cash deposit, must furnish the department with whatever information has been ascertained by reason of investigation or as a result of drilling.

The government order continues as follows:

"The applicant must have machinery and equipment on the reservation within 60 days and must continue the work with reasonable diligence. Should oil in commercial quantity be obtained the applicant must immediately select the area that he wants to lease, and, while he gets back his expenditures to the amount of the deposit made to the department, he is also entitled to the establishment of a credit for an amount not exceeding 75% of the approved expenditures.

"This credit may be applied in payment of the rental of any petroleum and natural gas lease that the applicant may hold, including the rental for the first year of any portion of the reservation which he may wish to lease.

"There is a concession where application is made between the first day of October and the 15th of March in the next year, as a reservation in such case does not come into effect until March 16 following, but the applicant has the option to have the reservation take effect earlier if he should wish to begin operations.

"What these regulations really mean is that a person who intends to lease land and will begin operations within 60 days can have his expenditures applied on the first year's rental or on the rental of any lease that he may have.

"It should be noted that the reservation is for 60 days and renewable for 90-day periods but cannot exceed one year, so the applicant must, if he wishes to lease the area, make his selections within the year as the leases will be effective from the date of the reservation."

Post-War Appliance Prices

Home appliance makers, according to the *Wall Street Journal*, hope to share pre-war prices, despite high wage rates. Their two aces in the hole are production efficiency and better distribution. Just before the war Westinghouse Electric had developed a new method of making refrigerators which increased output by one-third with the same machinery and men; less materials were used, too. Another big manufacturer is considering moving his refrigerator-making plant to the distribution center of the country. His pre-war operations involved an assembly plant on the east coast with parts plants scattered over the country.

Portland Gas & Coke Company set many records in its 85th year of service. Those of especial interest are summarized in this report:

THE DEMAND for Portland gas was greater than in any other year of the Company's history, totaling 6,391,449,000 cubic feet. This was 12.3% more than in 1942, 43.2% more than in 1941. This huge volume of gas went to 99,509 customers, more than 10,000 of whom have been added since the outbreak of the war. Meeting the tremendously expanded needs of a crowded war production area has been our big responsibility for the past two years and will continue to be our major job in 1944.

IN THE TWO YEARS America has been at war, Portland Gas & Coke Company has produced 181,000 tons of Gasco Briquets. This is almost as much as were manufactured in the previous four years. This greatly stepped-up production means that Gasco Briquet manufacturing and delivery crews have kept operations at full speed, making every movement and every minute count. Thanks to their good work, hundreds of families who might otherwise have been cold enjoy the even, economical, ash-free warmth of Gasco Briquets, the Northwest's best solid fuel.

Uncle Sam asks you to use gas wisely. For when you save gas, you also save manpower, transportation and raw materials . . . all vital to the war effort. Your conservation has been effective . . . and both Uncle Sam and your Gas Company appreciate the heat-saving habits you have practiced so faithfully. But please don't relax your conservation. Some of our coldest weather is still to come.

REMEMBER when you could drive up to a Gasco Motor Fuel pump and say, "Fill 'er up," knowing you were getting miles of quiet, powerful performance. The benzol that gave Gasco Motor Fuel its anti-knock qualities is still made by your Gas Company . . . but it's all going into vitally needed aviation gasoline and synthetic rubber. After the war, though, Gasco Motor Fuel will again be waiting for you at your service station . . . Portland Gas & Coke Company is also contributing substantial quantities of other by-products to the war, including coke and pitch for aluminum production, solvents and naphthalene.

WITHOUT CAPABLE PEOPLE to operate them, even the best of equipment and materials are worth nothing. So the major credit for our achievements in 1943 must go to the 680 skilled and experienced men and women who are responsible for giving you such good service. We're proud, too, of the 81 absent members of the Gas Company organization who are now serving in the armed forces of the United States. Just as soon as their war service is completed, they'll be welcomed back to jobs with a future in this progressive, long-established Oregon industry.

OVER-ALL LIVING COSTS have increased greatly in three years. Our costs for labor and materials have gone up, too. But none of our prices have been increased. *You still buy Portland gas at prewar bargain prices,* the lowest in the entire Pacific Northwest. Gasco Briquets haven't gone up, either, which makes them a bigger value than ever.

GAS IS WAR MATERIAL Use it wisely!

As we start our 86th year, we want you to know that we appreciate your business and are sincerely grateful for your cooperation which is helping us do our wartime job.

PORTLAND GAS & COKE COMPANY

This year-end advertisement of Portland Gas & Coke Co., prepared by McCann-Erickson of Portland, and published throughout the company's territory during early January summarizes the company's achievements in its 85th year of service.

"CONSERVE ALL FUELS"

THE ABOVE illustration and headline typify a series of advertisements sponsored by the P.C.G.A. in western trade journals. The Association is also publishing full-page conservation messages in domestic magazines.

NO ACTUAL SHORTAGE HERE

At Government request, we thus inform the public that *all* fuels and utility services, including gas, must be conserved for Victory. But we also point out that the *supply* of gas in the Pacific West is *ample;* and that only lack of men and materials prevents expansion of facilities to meet unprecedented demand.

"VOICE" OF OUR INDUSTRY

On such timely topics, the P.C.G.A. speaks for all member gas companies . . . in regional publications of general circulation . . . under the direction of the Cooperative Advertising Committee.

THE PACIFIC COAST GAS ASSOCIATION

GAS FUEL

SERVING THE WEST IN WAR AND PEACE

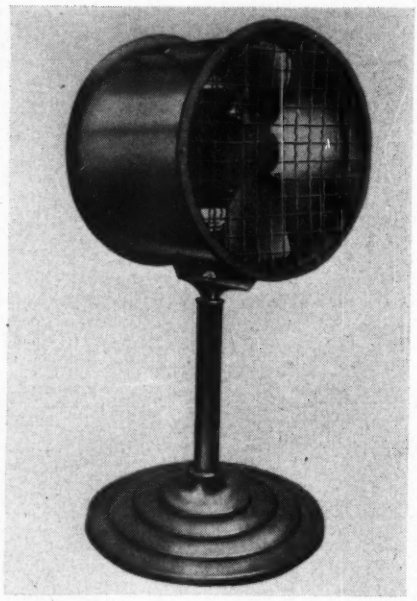
NEW PRODUCTS

Industrial Fan

Chelsea Fan & Blower Co., Inc., 1206 Grove St., Irvington, N. J.

Model: The Air Blaster.

Application: Designed to deliver a large volume of air in a straight line to the spot where it is needed. For use in steel mills, foundries, shipholds, forge rooms, meat packing and cold storage plants, freezers, dairies, cooling condensers, ammonia compressors, etc.



Description: The unit consists of a heavy gauge welded steel housing, mounted on an adjustable pedestal which may be tilted 60° up or down. It is of a heavy steel, die cut, die formed, and perfectly balanced, and is made in three sizes: 18-in., ¾-hp., 6000 cfm. motor; 24-in., 1½-hp., 9000 cfm. motor and 30-in., 1½-hp., 11,000 cfm. motor.

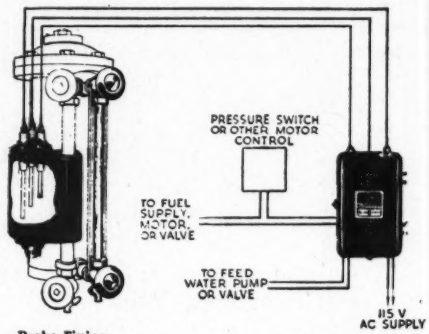
Boiler Control

Combustion Control Corp., 77 Broadway, Cambridge 42, Mass.

Model: Fireye Electronic Feedwater Controls Series P156N.

Application: For maintaining constant boiler water levels automatically, and for guarding against low water hazards.

Description: For automatic feed water pump control and low water protection, Fireye Type P156N is used with Probe Fitting Type H53, as shown in the accompanying illustration. The probe fitting may be mounted parallel to the water column, or directly on the boiler, and is wired to the electronic control. Three probes within Type H53 mark boiler feed water pump on and off levels and a low water danger point. The top and middle probes determine the high and low levels at which the boiler feed water pump is turned on and off to maintain constant water level. When water falls below the middle probe, Fireye closes the electrical circuit controlling the pump and water feeds into the boiler. When the level rises to the top probe, the water itself acts as conductor of a minute electrical current which operates the electronic control and turns off the pump. The pump remains inoperative until boiler water again falls to the level of the middle probe. The lowest probe defines the danger point below which boiler water must not fall. Should water drop below this safety probe, Fireye immediately shuts off the fuel and sounds an alarm.


PRESSURE SWITCH OR OTHER MOTOR CONTROL
TO FUEL SUPPLY, MOTOR, OR VALVE
TO FEED WATER PUMP OR VALVE
115 V AC SUPPLY
Probe Fitting
Electronic Control

Typical FIREYE Installation For Automatic Boiler Feedwater Control And Low-Level Safeguard

Types are available also for automatic pump control only, or for low-level protection only.

Fireye boiler feed water controls are supplied as standard for boiler pressures to 300 pounds and for operation from a supply of 115 or 230 volts A.C. 60 cycles. The equipment governs solenoid valves, small horsepower pump motors, or pump motor magnetic starters. The probe housing is furnished in either cast or malleable iron, and the electronic control in a weather-proof pressed steel housing, both attractively finished in green crystal.

Flaring Tool

The Imperial Brass Mfg. Co., 1200 W. Harrison St., Chicago 7, Ill.

Model: Imperial No. 175-FP Multi-Size Double-Flaring Tool.

Application: Designed specifically for flaring plastic tubing.

Description: Complete tool consists of flaring bar, yoke with swivel cone and four adapters, all furnished in a metal kit. One tool handles the four most popular sizes of tubing: ⅜-in., ½-in., ⅝-in., and ¾-in. outside diameter. While it is designed especially for .062 wall tubing, it will also handle .031-in. wall. The tool is fully described in bulletin No. 338, available from the manufacturer.

Catalogs

• **R-S Products Corp.,** Wayne Junction, Philadelphia 44, Pa., has published catalog No. 14-B, a 36-page bulletin describing a complete line of butterfly valves. It is illustrated with both manual and power operated valves for pressures from 15 to 900 psi, and contains detailed specifications of new type valves. Among the illustrated valves are (1) a dual type, designed for a high pressure drop and small volume or a low pressure drop and large volume; and (2) a three-way butterfly valve for mixing and quick interchange service.

• **Jenkins Bros.,** 80 White St., New York 13, N. Y., now has available a six-page brochure describing the company's new line of air furnace malleable iron gate, globe, angle, and check valves. These valves are recommended for 150 lbs. steam pressure at 450° F.

• **Victor Equipment Co.,** 844-54 Folsom St., San Francisco, Calif., has published a new eight-page bulletin, covering its line of "Gas-O-Dome" regulators. The bulletin discusses the product generally, and then describes in detail Models GD-41, GD-20, GD-40, GD-50, and GD-15. It also includes a chart to aid in selecting the proper type of Gas-O-Dome regulator.

• **Automatic Temperature Control Co., Inc.,** 34 E. Logan St., Philadelphia 44, Pa., has issued Catalog A3, a four-page leaflet giving detailed engineering and application data on ATC's line of high-speed motorized valves for "On-Off" control of steam, air, oil, gas or chemical solutions. Construction and operating features are fully illustrated and explained by tables. The catalog includes valve information and selection chart to assist in proper valve selection based on speed, stroke and operating power required.

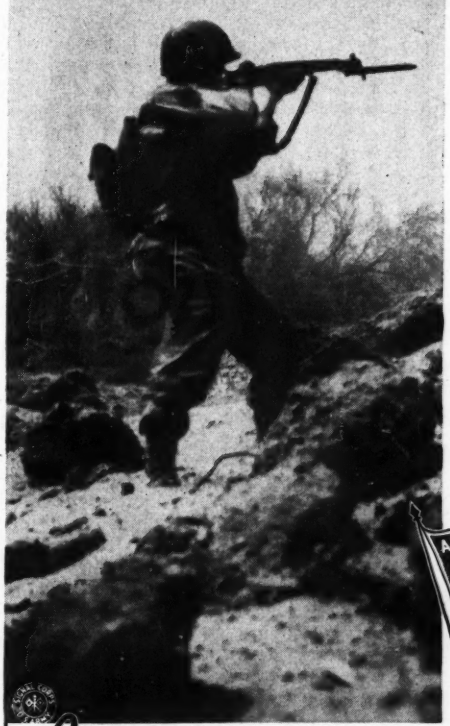
• **Askania Regulator Co.,** 1603 S. Michigan Ave., Chicago 16, Ill., has recently published Bulletin 100, "Askania Pressure Control." The bulletin describes completely the application of Askania regulator equipment to pressure and flow control problems. Installation photographs and diagrams show how the equipment is used. One feature of the bulletin is a valve-sizing chart which shows how butterfly valve sizes may be determined in a quick and easy manner.

• **Roots-Connersville Blower Corp.,** Connersville, Ind., has recently issued bulletin 100-B14, an eight-page booklet describing their Inert Gas Generators, designed to produce a mixture of nitrogen and carbon dioxide with a small percentage of water vapor and less than 1% of either oxygen or carbon monoxide, as desired. These generators, either gas or oil fired, are available in both portable and stationary types, for a capacity range of 1000 to 35,000 CFH at a pressure of three lbs. High pressure installations can be supplied for special requirements, with storage facilities. Drive can be by electric motor, or gas or steam engine, and the units are suitable for operation in outdoor locations.

• **Cochrane Corp.,** 17th and Allegheny, Philadelphia 32, Pa., has recently released Cochrane Reprint No. 29 entitled "Flow Meter Engineering," a 16-page booklet by William C. Bennett telling why, when and where flow meters and instruments are needed in the modern plant, and how they can be made to further the war effort. A considerable amount of basic metering data is covered, and two pages of drawings are devoted to details of proper installation methods. The reprint also includes helpful hints for keeping instruments in proper repair.

• **Roots-Connersville Blower Corp.,** Connersville, Ind. Bulletin 120-B-12 is a 20-page booklet dealing with the company's centrifugal blowers and exhausters, and applying to both single and multi-stage units. Topics discussed are a brief history of the company's experience in building centrifugal units, together with a list of applications; advantages inherent in centrifugal design; operating characteristics; control devices. Illustrations include sectional views, types of impellers, installation and shop cuts of various single-stage and multi-stage units, and action views of manufacturing and testing operations.

★ UNFINISHED BUSINESS ★



UNCLE SAM has "unfinished business" all over the world. But he's getting along with it, fast! We, of PAYNEHEAT, are concentrating on our war job. But when the shooting stops, our dealers can resume *their* unfinished business—with time-tested, years-ahead . . .

Payne

ZONE-CONDITIONING

Post-war successor to old-fashioned central heating! Carefree, fuel-saving gas heating and fresh air circulation . . . under finger-tip control *by zones or individual rooms.* You'll hear more about PAYNE Zone-Conditioning. But meanwhile, let's all help finish the *big* job. *Back the boys with Bonds!*

ARMY E NAVY

GAS FUEL HAS EVERYTHING

PAYNEHEAT

NEARLY 30 YEARS OF LEADERSHIP

Payne FURNACE & SUPPLY CO., INC., BEVERLY HILLS, CALIFORNIA

PIPELINE CONSTRUCTION

• According to a December report of the **United Gas Pipe Line Co.**, progress on that company's 11-job program to increase deliveries along the Gulf Coast from New Orleans to Mobile and Pensacola areas has been rapid. Four jobs have been completed (replacement of the 6-in. line to the U. S. Naval Station at Pensacola with 8-in.; replacement of 5.49 mi. of 14-in. pipe on the Lirette-Mobile line with 16-in.; completion of the 14-in. loop line from Gulfport tap for 16.35 mi. along the same line; and construction of an 8-in. loop line on the Laurel lateral line). The 4-in. line to shift the service of customers requiring high operating pressures from the Magnolia, Miss., line to the Monroe-Jackson line was scheduled to go into service in December. In addition, work is going along well on the 14-in. loop between Mobile Junction and Mobile; the DeLarge 12-in. line; and the Jackson, Hattiesburg, and Tallulah compressor stations.

Three 16-in. looplines (nearly 20 miles) of the same company's Baton Rouge-New Orleans main line is being removed. The salvaged pipe is being used to loop the Lake Long-St. Rose line from the Godchaux canal, near Bayou Des Allemands, and connecting with the Baton Rouge-New Orleans line near St. Rose.

• The relaying of eight miles of pipeline to increase the gas flow 1,000,000 cu. ft. daily has been completed by **Zenith Gas Co.**, which serves Woodward, Cherokee, Alva, and other Oklahoma communities. The company's gas supply comes from wells southeast of Medicine Lodge, Kan. The change involved the replacement of four miles of 6-in. pipe south of the Kansas border with 8-in., and the looping of the 6-in. thus taken up with four other miles of 6-in.

• The new two-unit Chillicothe compressor station of **United Gas Pipe Line Co.**, complete except for minor improvements to the plant site, went on line Nov. 22, delivering gas to the Stamford and Western pipeline. The station is designed to handle 8,400,000 cu. ft. per day with a suction pressure of 178 lb. and a discharge pressure of 300 lb., and operates with discharge pressures as high as 325 lb. Chief engineer at the new station is R. W. Haney, formerly at the Conroe compressor station in the Houston district.

• **Southern Counties Gas Co.'s** northern district pipeline project, allowing an additional 8,000,000 cu. ft. of gas daily from the Santa Maria field is now complete and in operation, according to N. K. Senatoroff, of the company's engineering department, who designed the dehydration plant in use there. The project was begun last April, and included the laying of some 28,800 ft. of 8-, 10- and 12-in. pipe and the installation of a dehydration plant at the Battles Station of Union Oil Co. The compressor plant of the latter company has been enlarged to supply the additional gas.

• Work on the 230-mile, 26-in. natural gas pipeline of the **Cities Service Transportation and Chemical Co.**, from the Guymon field to Blackwell, Okla., was about 50% completed by Jan. 1.

Construction is being pushed by about 300 men in three 8-hour shifts at an average of a mile-and-a-half a day.

Work was retarded by two heavy snows and near zero weather. Bechtel-Dempsey-Price, contractors of Bartlesville, Okla., have the contract. The line will have a capacity of 140,000,000 cu. ft. per day and will deliver gas from the Guymon, Okla., sector of the Hugoton field into the Cities Service major system which serves Kansas City, Mo., and several other cities in Missouri, Kansas and Oklahoma.

• Construction of a 14½ mi. 6-in. welded pipe line to transport natural gas from the Stewards Mill gas producing area in Freestone County to Lone Star Gas Co.'s interconnected pipe line system was started January 26, with completion scheduled the middle of February. The line has a daily capacity of between 11 and 12 million cu. ft. The new line will extend west from the field, located southeast of Streetman, and tie into Lone Star's 10-in. line at a point north of Wortham.

• Three main-line gangs of Williams Brothers Corp. have started the laying of pipeline at several sections of the Tennessee Gas & Transmission Co., Corpus Christi, Texas-Charleston, W. Va., 24-in. natural gas line. Work is also in progress at the following river crossings: Kentucky, Cumberland and Tennessee rivers; Clear Lake in Louisiana, and the Nueces and Trinity rivers in Texas. The contractors are using for this project a new type of bending machine which they have developed.

• **Independent Natural Gas Co.'s** 877-mile, $28,000,000 proposed gas line from Ray, Texas, to Milwaukee, Wis., was placed in the permanent file on Jan. 6 when FPC granted the compnay's request for withdrawal of its application without prejudice. (See page 51.)

• Plans for the construction of a gas line from Tampico to Mexico City are being studied by the Mexican government oil agency. This project, estimated to cost $5,000,000, will carry gas now being burned at oil fields near Tampico, to the domestic market at Mexico City.

Middle West Corp. Integration Ordered

The $500,000,000 Middle West Corp. system was ordered Jan. 24 by the Securities and Exchange Commission to dispose of 22 direct and 33 indirect subsidiaries in the United States, Mexica and Canada, in compliance with geographic integration proceedings begun March 1, 1940, under the Holding Company Act.

New Gas Production

• Oil companies are displaying considerable interest in Alberta's Brazeau area, some 70 miles west of the town of Red Deer, and development in this field is expected to be extensive in 1944. The Brazeau region has attracted wide attention since Ram River Oils, Ltd., brought in a producing well there late last year. As a result leases covering more than a half million acres have been taken out by various companies.

In mid-January, officials had declined to estimate the daily flow of the Ram River well, drilled to a depth of 4340 feet, since a complete production test had not been made at that time. I. B. Howatt of Edmonton, president and managing director, stated, however, that the oil was high quality crude of 41.5 degrees, with a relatively low sulphur content.

Howatt said the company intended to spud in another well, spotted in the light of information obtained from operations of the producer. Work on the new well would proceed, he said, on the assumption that the producer had established the existence of a high pressure reservoir of oil and gas, and that this reservoir could be encountered. Howatt said the main difficulty since the bringing in of the well last year had been an insufficient volume of gas; that the gas was increasing steadily and had given no indication it had reached its maximum.

• United Gas Pipe Line Co.'s Penrod-Jurden No. 1, second well in the Holly-Ridge field, Tensas parish, La., was completed in November, making 328 barrels daily through the 5/32 positive choke with 1730 lb. casing pressure and 1550 lb. tubing pressure. The new well, offsetting the field's discovery well, drilled by Carter Oil Co., has a total depth of 8428 ft.; but production is from perforations between 8282 and 8410 ft. Penrod-Jurden No. 2 has already been drilled to over 3000 ft. Grayling No. 15 in the company's Monroe gas field was gauged at 1,285,000 cu. ft. per day with a rock pressure of 880 lb.; this well will be acidized to increase its capacity.

Consolidated Electric & Gas To File New Plan With SEC

Consolidated Electric & Gas Co. soon will file with SEC a new plan of corporate integration under the Public Utility Holding Company Act to replace the original plan formulated in June, 1943.

The new plan is necessary because a number of transactions have already been consummated and others are pending which would greatly simplfy the reorganization plan already on file. The latter would thereby become obsolete and very substantial amendments to it would be needed.

The substitute plan is to be filed with SEC immediately following the competitive sale by Consolidated of its holding of the entire 400,000 common shares of the Central Illinois Electric & Gas Co. subsidiary. The operating company stock is expected to be sold in the last week of February, with the new reorganization plan of Consolidated being filed around March 1.

Willows Natural Gas Project Nearing Completion

Installation of the six-mile 3½-in. transmission line to carry natural gas from wells northeast of Willows to the Willows distributing plant of the Pacific Gas & Electric Co. is practically completed; and as soon as the necessary metering and regulating equipment is secured, the company will be ready to render natural gas service and cut over customer appliances to burn the higher heating value (900-970 Btu. per cu. ft.) gas. The present manufactured gas has a heating value of about 540 Btu. per cu. ft.

The utility is assuming the full responsibility and cost involved in adjusting customer appliances.

The bringing in of natural gas to Willows reduces the manufactured gas service of Pacific Gas & Electric Co.'s system to the communities of Grass Valley, Nevada City, Redding, and Red Bluff.

The rates to be charged with the new service are the presently effective manufactured gas rates, with the exception of a change in the minimum charges. Because of the higher heating value of the gas, this will mean savings of about 30% to the customers.

FPC Hearing for Two New Applications

FPC hearing for (1) applications of Hope Natural Gas Co. and New York State Natural Gas Corp. for the construction and operation of additional facilities in West Virginia and Pennsylvania, and (2) applications of the Manufacturers Light & Heat Co., Manufacturers Gas Co., Pennsylvania Fuel Supply Co., United Fuel Gas Co., and Home Gas Co., for authority to construct and operate additional facilities in Pennsylvania, West Virginia and New York, were set for Jan. 26.

The first project is for the purpose of supplying New York State Natural with approximately 15,000 Mcf. of natural gas per day and, in addition, of supplying about 20,000 Mcf. per day to United Natural Gas Co., Republic Light, Heat & Power Co., Inc., North Penn Gas Co., Allegany Gas Co., Godfrey L. Cabot, Inc., and Empire Gas & Fuel Co.

The second project will supply approximately 20,000 Mcf. of natural gas per day to United Natural Gas Co., North Penn Gas Co., Penn-York Natural Gas Corp., and Producers Gas Co.

Consumers Power Offers Used Appliance Placement Service

As a means of helping both the customer who needs an appliance but can't buy it and the customer who has an appliance he wishes to sell, Consumers Power Co., Jackson, Mich., has established a new wartime service.

It is inviting customers with appliances for sale to list them with the Consumers office, and is issuing a similar invitation to customers wishing appliances to list their needs. The company then puts prospective buyers in touch with prospective sellers. This is a free service for which the company makes no charge and accepts no responsibility; it merely maintains an information center.

In each division the domestic service supervisor is in charge of the new activity. H. H. Davis, general domestic service supervisor, is in general charge of the entire project.

LP Gas Shortage Caused By Transportation Lack

Petroleum Administrator Ickes Jan. 24 assured consumers that the current nationwide difficulty in obtaining liquefied petroleum gases is a temporary one and will be corrected as soon as the specially constructed tank cars used to haul these gases can be returned to this type of service.

Length of the shortage of transportation is not definitely known. It is hoped that in the near future enough cars will be returned to LP-Gas service so that more normal delivery services can be resumed by the distributors. In the meantime, consumers should be warned to do everything possible to conserve propane and butane.

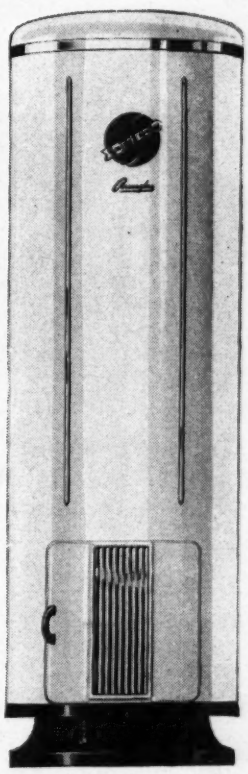
Testing Requirements

Gas ranges must comply in detail with over 558 requirements; water heaters, 230; central heating gas appliances, 387; and gas space heaters, 270—to be approved at the AGA Testing Laboratories. A similar number of requirements are specified in the standards for other appliances.

There's Only One Permaglas!

YES—there's only *one Permaglas* and nothing else like it—if you are interested in selling *profitably* in a market that is demanding *newer* and *higher* standards of perfection in hot water convenience, sanitation, and cleanliness.

Permaglas IS actually glass—a smooth, lustrous, sanitary blue glass lining, permanently fused to the inside of the steel tanks in SMITHway Automatic Gas Water Heaters. It's a good name to remember—*Permaglas*—your proof of quality—your profitable source of customer satisfaction in the automatic water heater field. *Permaglas* has a real *inside* story that you will want to know more about.



A. O. SMITH CORPORATION
Milwaukee 1, Wisconsin

Offices at: New York, Pittsburgh, Chicago, Tulsa, Houston, Los Angeles, Seattle.

SMITHway Permaglas GLASS LINED WATER HEATERS

*Permaglas Victory Model Heaters are available in all sizes in accordance with L-185.

PEOPLE

• **Paul W. Craig,** senior engineer of the Equitable Gas Co., Pittsburgh, Pa., has been appointed manager of the Industrial Sales Department. Mr. Craig is a graduate of Carnegie Institute of Technology with the degree of B. S. in civil engineering. He entered the employ of the Equitable Gas Co. in 1924 as a cadet engineer, and prior to his present appointment held the positions of district foreman, field engineer, supervisor of industrial installations, and supervisor of heavy industrial sales.

P. W. Craig

• **Dean H. Mitchell,** president of the Northern Indiana Public Service Co., Hammond, Ind., has been elected president of the Indiana State Chamber of Commerce, succeeding **Louis Ruthenburg,** president of Servel, Inc.

• **Robert R. Gros,** for several years a member of the publicity department under **Al C. Joy,** has been named acting manager of the publicity and advertising department of the Pacific Gas & Electric Co. Mr. Gros is a Phi Beta Kappa graduate of Stanford University, where he later did graduate study and then was a member of the teaching staff. As a member of Al Joy's staff Mr. Gros' special field of activity was that of press relations and public speaking. The staff of publicity and advertising experts which Mr. Joy had built up has been retained intact.

• **E. F. Hawkesworth,** formerly district service foreman at the Slauson Street operating headquarters, Southern California Gas Co., Los Angeles, has been transferred to that company's butadiene plant as staff assistant; and **R. M. Hahn** has been shifted from Beverly Hills to Slauson to succeed him. With the consolidation of the customer service and distribution departments for the Beverly Hills and Hollywood areas, **C. W. Beckett,** formerly customer service foreman at Hollywood, has been placed in charge of customer service activities of the combined office.

• **Rock Granite Taber** has been named operating vice president of Atlanta Gas Light Co. and Florida Public Utilities Co., according to an announcement by **H. Carl Wolf,** president. His headquarters will be in Atlanta, Ga. He succeeds **E. J. Meade,** who resigned to become associated with the Texas Public Service Co. of Austin, Texas. Mr. Taber was formerly vice president of Stone & Webster Service Corp. and had been connected with that organization for 37 years in the various departments of engineering, construction, service and operations of public utilities.

R. G. Taber

• **Ben C. Adams,** president of the Gas Service Co., Kansas City, Mo., has announced that **Paul C. Ford** has been named manager of the company's gas properties in Independence and in the Inter-City district, to succeed **Lloyd L. Garner,** who has been granted a leave of absence because of ill health. Mr. Ford has been with the Kansas City Gas Co. since 1907, and has been superintendent of installations there for many years.

Mr. Adams also announced that **Cy C. Young,** former assistant new business manager of the company, and senior engineer in the power branch of the WPB from September, 1942, to July, 1943, when he was promoted to utilization engineer in the Natural Gas Division of the OWU, has been released from Washington to return to the Gas Service Co. for special work.

• **Clifford E. Paige,** president of the Brooklyn Union Gas Co., has been awarded the Downtown Brooklyn Association's gold medal, presented annually to the citizen who has rendered the "most distinguished service for Brooklyn" during the year. The medal was presented at the annual luncheon meeting of the association on Jan. 25. Mr. Paige, who has been president of the American Gas Association, New England Gas Association, Empire State Gas & Electric Association, and the Guild of Gas Managers, and vice president of International Gas Union and Electric & Gas Association of New York, has also been most active in civic, philanthropic and business organizations in Brooklyn.

• According to a recent announcement by **Ernest R. Acker,** AGA president, the new chairman of the AGA Accident Prevention Committee is **George J. Ruoff,** safety engineer, Central Hudson Gas and Electric Corp., Poughkeepsie, N. Y. Mr. Ruoff, who is also a member of the Accident Prevention Committee of the Edison Electric Institute, has been with Central Hudson since 1928, and has been in charge of the company's accident prevention program since 1934, except for one year when he was electric superintendent.

This committee is greatly concerned with the safety of gas industry war workers and with improving the long-time safety record of the industry. It also sponsors individual and company awards for outstanding accident prevention achievement.

STANDING GUARD
FOR SAFETY
H-M LOW PRESSURE REGULATORS
give dependable, long-life service, economically and with a minimum of attention. Precision engineered, these regulators control the gas flow...regardless of main-line pressure.
Although our plant is now working at capacity on vital war equipment, a limited supply of regulators is still available.
Send for complete details regarding available sizes and specifications.
REGULATOR CO.
800 EAST 108TH STREET
HM
THERMO CONTROL CO.
LOS ANGELES 2, CALIF.
A Regulator for Every Purpose

E. M. Kelley

J. H. Wilson

• With the assumption of operations of Lone Star Gas Co.'s El Paso distribution system by its new owner, Southern Union Gas Co., **E. M. Kelley,** district manager of the Southern Union properties in the Clovis district since 1938, has been transferred to El Paso as manager. Mr. Kelley has been with Southern Union since 1930. **J. Harvey Wilson,** district manager for the company at Santa Fe, New Mexico, replaces Mr. Kelley at Clovis, and will manage the company's Clovis district properties, which include Clovis, Portales, Tucumcari, Texico and Farwell. Mr. Wilson joined Southern Union in 1928, and spent some time as district manager at Clovis before his transfer to Santa Fe.

• **F. T. Parks,** formerly oil and gas engineer with the Empire Gas & Fuel Co., has been elected vice president in charge of gas operations of the Public Service Co. of Colorado, following its segregation from the Cities Service group and reorganization as an independent company. Before his recent election he was general superintendent of the gas division of the Public Service Co. of Colorado.

• **E. M. Tharp,** general manager of Ohio Fuel Gas Co., has announced the appointment of **David R. Edwards** as manager of employee relations for the company; and of **Thomas E. Darby** as general service manager, to succeed Mr. Edwards. Mr. Edwards has been with the company for 18 years, and Mr. Darby, an architectural engineer, joined their staff as a heating engineer in 1932.

• **T. J. Strickler,** vice president and general manager of the Kansas City Gas Co., has been unanimously nominated by the Board of Directors of the Kansas City, Mo., Chamber of Commerce for reelection to the Board of Directors of the United States Chamber of Commerce.

Major Strickler is nominated to represent the 7th election district which includes the states of Missouri, Kansas, Arkansas, Louisiana, Oklahoma and Texas.

• **Wilbur Masheter** has been appointed meter and regulator engineer of Southern Counties Gas Co., to succeed **Harry Faull,** who recently went to American Liquid Gas Corp., Los Angeles.

• **W. B. Hewson,** manager of publicity and advertising for Brooklyn Union Gas Co., has been appointed to the national advertising copy committee of the AGA, according to an announcement by **H. Carl Wolf,** chairman of the AGA Committee on National Advertising.

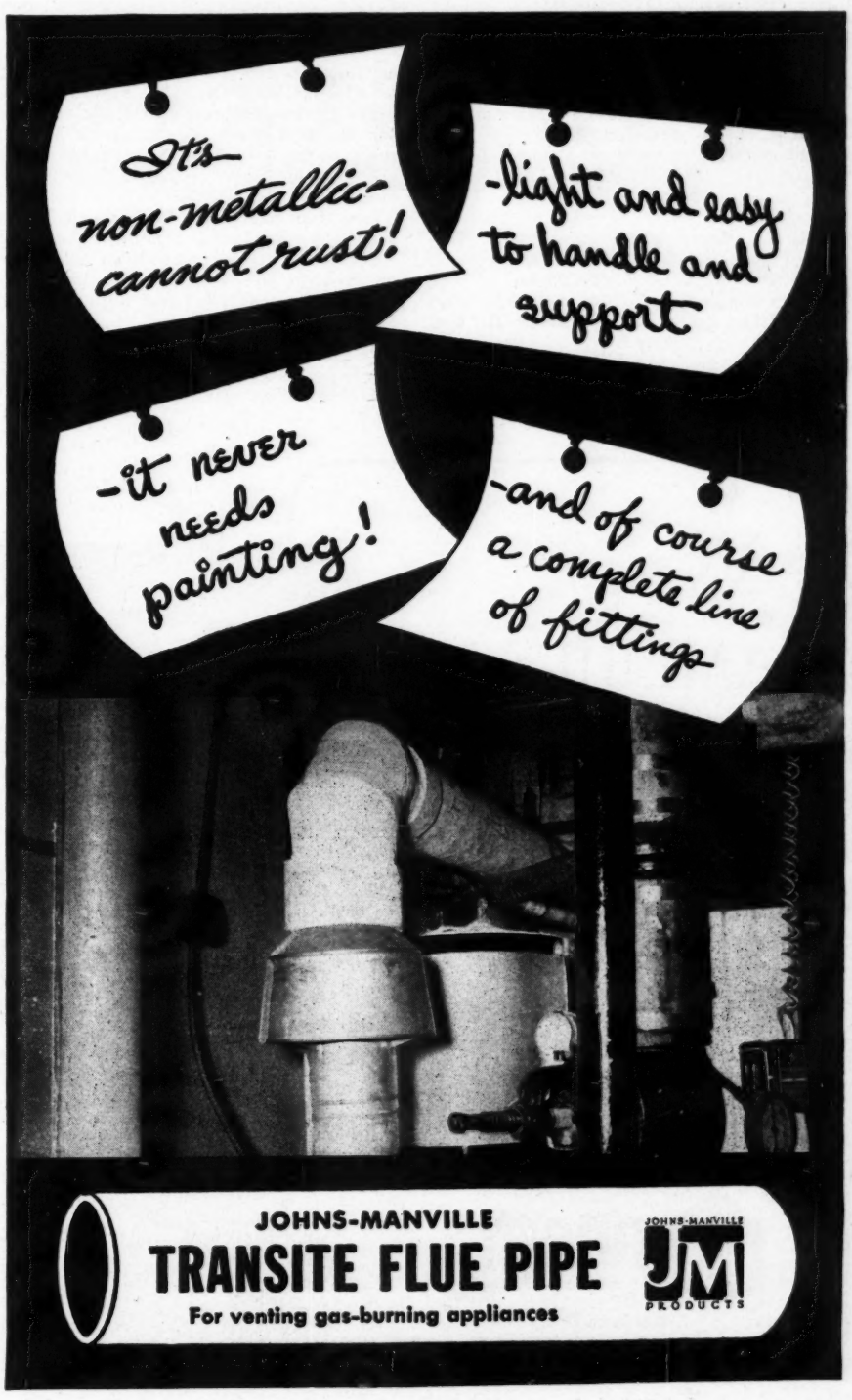
• **Ralph H. Snyder,** safety engineer for Oklahoma City Air Depot, has been elected president of the recently organized Industrial Safety Council. Oklahoma safety engineers are eligible for membership. Other officers include David C. Thomas, vice president; J. Russell Steele, secretary; and Lowell Brown, treasurer.

• **L. T. Potter,** superintendent of production of the Lone Star Gas System, was elected president of the Dallas Petroleum Engineers Club on Dec. 17. Mr. Potter has been with Lone Star since 1928, and has been superintendent of production since the merger of Production Engineering and Production Department in 1938.

According to an announcement by **R. Vandercook,** Lone Star Gas Co. pipe line superintendent, **W. G. Webb,** foreman of the Gordon pipe line district, has been appointed foreman of the Dallas pipe line district, to succeed **Tod Pazdral,** who resigned to go to Tennessee Gas and Transmission Co. **E. K. Smith,** Ranger district foreman, has taken over Mr. Webb's duties as foreman of the Gordon district.

• **Dan O. Howard,** petroleum geologist of the oil and gas conservation department, Oklahoma Corporation Commission, resigned effective Jan. 25 to join the marines at San Diego, Calif.

Mr. Howard was chairman of the Research and Coordinating Committee of the Interstate Oil Compact Commission



up to December of last year and still remains as a member. He started conservation work in the Oklahoma City field during the administration of former Governor William H. Murray. Since that time he has been in the state conservation department. His place will be filled temporarily by **Thomas D. Bailey,** assistant engineer in the department.

• **Sam Schwieger** has been appointed advertising manager of Southwestern Gas & Electric Co., Shreveport, La., to succeed Arthur J. Kane, resigned, according to an announcement by Frank M. Wilkes, president of the company. Mr. Schwieger was formerly editor of the **Northwest Arkansas Times,** Fayetteville, Ark., and before that was secretary-manager of the Arkansas Press Association.

• **E. L. Ramsey,** customer relations manager, the Laclede Companies, St. Louis, was placed in charge of all customer relation activities in the cashier's department and mailing department, effective January 1, 1944. This responsibility is in addition to his similar duties in the customers advisers, telephone, and collection and credit departments.

• **K. S. Adams,** president of the Phillips Petroleum Co., Bartlesville, Okla., has been appointed chairman of the PAW's District 2 (Midwest) Petroleum Committee, to succeed **Harold B. Fell** of Ardmore, Okla., who resigned recently because of ill health. Mr. Adams has been a member of this committee since its inception in 1941.

Manufacturers

• **T. P. Keller,** general manager and technical director of Gas Purifying Materials Co., Inc., Long Island City, N. Y., has been made vice president and general manager of the company, according to an announcement made by **B. D. Klein,** president of the company. Mr. Keller went to the Gas Purifying Materials Co. in 1933 from Cities Service Co., where he had been a research engineer since 1928. Prior to that time he was a research engineer for the General Chemical Co.

• Gas Processes Division, of the Girdler Corp., Louisville, Ky., announces the appointment of **Leon E. Osmer** and **Melvin H. McKinney** as engineers. Mr. Osmer, a native of Iowa, has been with the Semet Solvay Engineering Corp. since 1924. Mr. McKinney, a native of Texas, has been with Lago Oil & Transport Co., spending much of the time since 1930 in Aruba. Since American entry into the war he has been with Dow Chemical Co. and Sinclair Rubber Co.

• **Col. W. F. Rockwell,** president of Pittsburgh Equitable Meter Co. - Merco Nordstrom Valve Co., recently elected to the boards of the First National Bank and Peoples-Pittsburgh Trust Co., of Pittsburgh, Pa., has resigned his position as director of production for the U. S. Maritime Commission in order to devote full attention to the manufacturing details of war work being done by his several interests.

• **E. H. Ronsick** has recently joined the Economy Equipment Co. of St. Louis, distributor of power plant specialties and metering equipment, and district representative of Surface Combustion Co. Mr. Ronsick was formerly industrial gas engineer and supervisor of house heating and commercial gas sales of the St. Louis County Gas Co.

• **Frank J. Nugent** has been appointed general appliance sales manager for Rheem Manufacturing Co. His headquarters will be at 570 Lexington Ave., New York City.

For the past six years Mr. Nugent has been sales manager for the Rheem Chicago and Houston, Texas, offices.

• **Lew M. Hull** has been appointed sales manager for the Hammel Radiator & Engineering Co. of Los Angeles. During the past 12 years Mr. Hull has been associated with Pacific Gas Radiator, Payne Furnace & Supply Co., and the Southern California Gas Co.

• **T. T. Arden** has been elected to the presidency of Grayson Heat Control, Ltd., of Lynwood, Calif. Formerly he was vice president and general manager of the company.

AN AMERICAN INSTITUTION

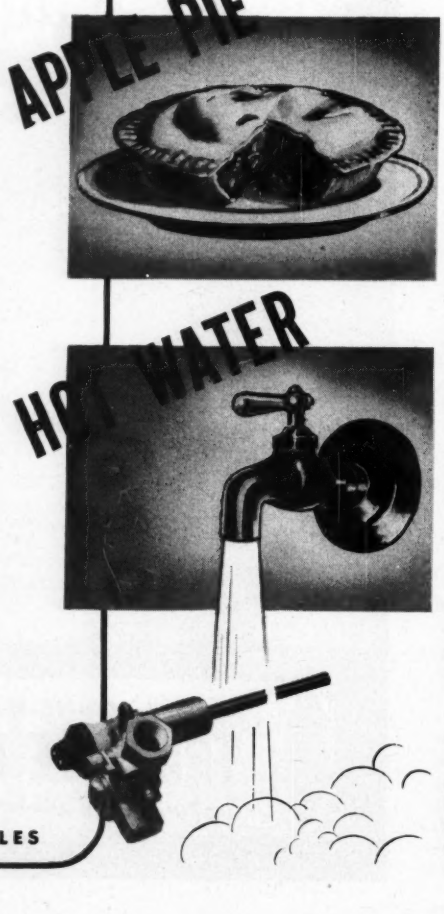
Apple pie is something truly American.

HOT WATER is likewise a symbol of the American way of life. Water heater thermostats made it practical to have hot water instantly — at the desired temperature.

DOMESTIC Thermostat Company is proud of the part it has played in developing a thermostat that is widely accepted by the gas industry.

Domestic

DOMESTIC
THERMOSTAT CO., LOS ANGELES



Obituaries

William G. Irwin, 77, of Columbus, Ind., director of the Indiana National Bank, and formerly president of the Citizens Gas Co., died recently in his office at the bank. Mr. Irwin was well known in the state for his philanthropic activities.

Frances May Simpson, editor of Brown's Directory of American Gas Companies for the past 16 years, died in Quebec on Dec. 31 after an illness of three months. In addition to her career as editor and statistician, Miss Simpson was an accomplished sculptress and was well known as a graphologist.

Robin Lark Smith, 68, superintendent of the Shreveport district meter shop, United Gas Pipe Line Co., died recently at his home in Shreveport, La. Mr. Smith had been with the company nearly 25 years, and had been superintendent of the meter shop since 1937.

John Andrew Quigles, 52, chief engineer of the Tallulah compressor station, United Gas Pipe Line Co., died suddenly, Dec. 11, while on a hunting trip. Mr. Quigles had been chief engineer of the Elm Grove compressor station for 20 years before becoming chief engineer of the Tallulah station in 1941.

ON ACTIVE DUTY

• **Guy W. Wadsworth, Jr.**, formerly vice president in charge of personnel for the Southern California Gas Co., Los Angeles, was promoted to the rank of lieutenant colonel on Dec. 17. Col. Wadsworth is in Washington with the Industrial Personnel Section of Army Service Forces. He entered the army in 1942 with the rank of major.

• **Wayne W. Fitkin,** commercial agent for Southern Counties Gas Co. at Santa Barbara, a member of that company for 22 years, is a lieutenant colonel in the Chemical Warfare Service in Washington. Col. Fitkin entered the service May 15, 1941, and has only recently returned to Washington after spending some seven months in the South Pacific.

• **Elmer Richardson,** former superintendent of the Ottawa property of Gas Service Co., has been promoted from the rank of major to that of lieutenant colonel. Colonel Richardson is with the Headquarters Office at Fort Ord, Calif. **Major Harold W. Johnston** of the same company is post engineer of the Topeka Army Air Base, Topeka, Kan.

• **Major Cecil M. MacGregor,** commercial department heating engineer of the Portland Gas & Coke Co., was recently assigned as a staff assistant on the staff of Lieutenant General Somerville, commanding general, army service forces.

• **Louis Joseph Delaney,** son of **John J. Delaney,** manager, Reliance Regulator Corp., Alhambra, Calif., has been given the rating of master sergeant in the Army Air Corps. Sergeant Delaney, an aerial engineer flight chief on active duty in the southwest Pacific area, has flown over 800 hours, including 25 combat missions.

• **Lieut. Col. Albert S. Johnson,** vice chairman of the board of directors, Southern Union Gas Co., Dallas, Texas, is stationed at Camp Bowie, Brownwood, Texas.

• **Capt. Scott Hughes,** general attorney, Southern Union Gas Co., Dallas, Texas, should now be addressed c/o Postmaster, New York, N. Y.

• **Maj. N. P. Chestnutt,** West Texas district engineer, Southern Union Gas System, Pyote, Texas, is stationed at Fort Sam Houston, Texas.

• **First Lieut. Joe D. Reid,** engineer, Southern Union Gas Co., Dallas, Texas, is stationed at Eighth Service Command, Dallas, Texas.

When Capt. **C. B. Downer** (Air Forces, foreign duty), formerly of the customers department (Redondo) of the Southern California Gas Co., was presented the Silver Star for courageous action combat, Lieut. Gen. **George C. Kenney,** commander of the South Pacific Air Forces, wrote a letter to Capt. Downer's father, **T. B. Downer,** in which he said: "I would like to tell you how genuinely proud I am to have men such as your son in my command, and how gratified I am to know that young Americans with such courage and resourcefulness are fighting our country's battle against the aggressor nations."

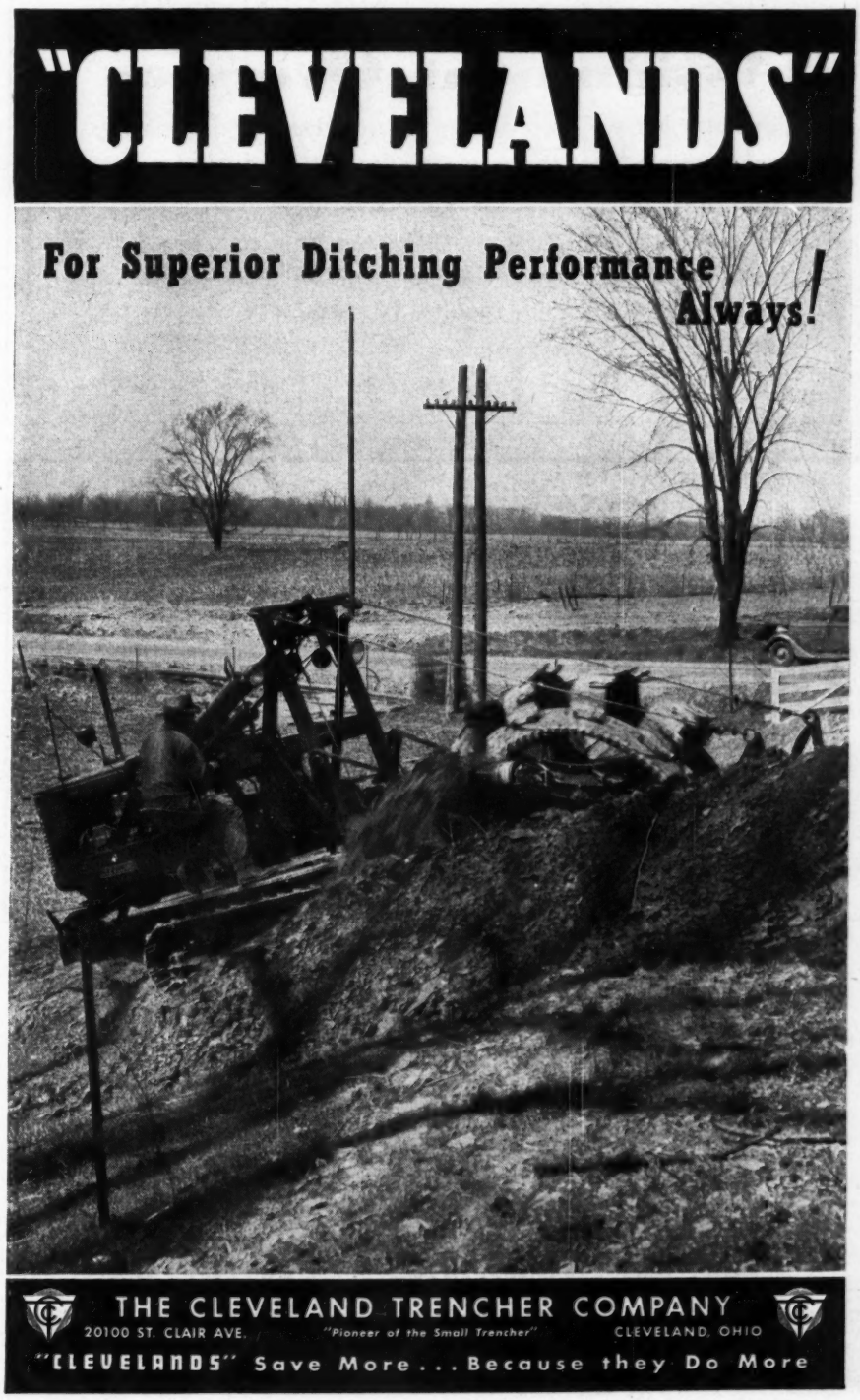
• **Capt. F. D. (Monk) Mallory,** former commercial manager, Community Public Service Co., Fort Worth, Texas, has gone overseas with a civil affairs operations unit.

• **Gladys B. Price,** formerly home service director of Southern California Gas Co., has been promoted from the rank of lieutenant (j.g.) in the WAVES to that of lieutenant.

• **John J. Winn, Jr.,** former commercial manager of Portland Gas & Coke Co., has been promoted from the rank of major to that of lieutenant-colonel. Col. Winn is in England with the corps of engineers, assigned to service of supply for the European theatre of operations.

• **A. R. Bailey,** on military leave as assistant to **H. L. Farrar**, president of Coast Counties Gas and Electric Co., was stepped up to lieutenant colonel on November 24. Lieut. Col. Bailey continues his headquarters at Fort Mason, San Francisco, where he is in charge of civilian personnel at the port of embarkation.

• Former Assistant Advertising Manager **Homer Laughlin,** Southern California Gas Co., has been promoted to the rank of Captain in the U. S. Army.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For Superior Ditching Performance Always!
THE CLEVELAND TRENCHER COMPANY
20100 ST. CLAIR AVE.
"Pioneer of the Small Trencher"
CLEVELAND, OHIO
"CLEVELANDS" Save More . . . Because they Do More

Canadian Court Rules on Gas Sales Tax Case

A LOWER court in the Canadian province of Ontario has dismissed an action brought by Union Gas Co. of Chatham against Clarence Cranston, of Tilbury East, lessor of gas acreage to the company. Union Gas had sought to recover money it had paid as a Dominion sales tax on "free" gas it had furnished to Cranston over a period of several years. The suit involved only the comparatively small sum of $68.66, but was in the nature of a test case to determine the validity of Federal legislation extending an 8% sales tax to gas and electricity, including free gas furnished to lessors of gas acreage.

The Canadian government issued several orders-in-council dealing with the sales tax on gas. On Sept. 12, 1939, an order exempting fuels from the sales tax was rescinded to make the tax applicable to gas and electricity. And on Dec. 14, 1940, a further order-in-council was passed making it lawful for the selling utility to collect from the consumer or user the sales tax paid by the company on gas supplied without charge. In this order, the Canadian Minister of National Revenue was empowered to determine the value on which the sales tax was to be calculated.

Cranston contended that he was not subject to the tax as his lease of gas acreage to Union Gas and its predecessors stipulated that he was entitled to free gas in addition to a cash payment of $200 a year for each producing gas well on his land. In a seven-page judgment, Judge H. E. Grosch of Ontario First Division Court ruled that the government orders-in-council had not stated that the tax was to be collected "notwithstanding the provisions of a written lease of agreement."

Judge Grosch also found that there is no evidence the Minister of National Revenue has determined the price of gas under the circumstances prevailing in this case. The judge said he also took into consideration Cranston's contention that the free gas used is not purified and that he, Cranston, must personally look after his own pipeline and services. Because of this, said Judge Grosch's judgment, Cranston's position is not the same as that of a regular consumer to whom purified gas is supplied and services rendered.

Southern California Gas Co. Sets Up Butadiene Dept.

President F. S. Wade, Southern California Gas Co., has announced the establishment of a new department, the Butadiene Production Department. Under this set-up, butadiene operations are being divorced completely from other manufacturing, compressor and storage operations, under the managership of Grove Lawrence. Mr. Lawrence will work under the direction of Dr. George Hebbard, who has been borrowed as a technical adviseor from the Dow Chemical Co.

Under the new arrangement, Elting Henderson, as manager of distribution, compression, and storage will supervise holder stations and gas pumping equipment in all divisions, and the Santa Fe gas manufacturing, compression and storage plant. Executive Vice President H. L. Masser will retain full responsibility for gas distribution and for manufacture, compression and storage, exclusive of the butadiene plant.

Tide Water Co., Wilmington, N. C., Has New Plant

The new gas plant of Tide Water Power and Light Co., Wilmington, N. C., operation of which was scheduled to start in January, will bring to six the number of sets operated by that company in Wilmington. It is a 7-ft. water gas set with a capacity of 70,000 cu. ft. per hour, and should serve the needs of several hundred additional residents of Wilmington and meet all the requirements of the community which are now limited because of production curbs.

Hugoton Gas Price Boosted

An increase of 2c per Mcf in the ceiling price for natural gas in the Hugoton field of Oklahoma, ordered from Washington, D. C., will mean additional income to land owners and royalty holders, as well as more revenue to the state through increased gross production taxes.

Two carbon black plants in the Hugoton area have been paying 2c per Mcf for gas and one was paying 4c.

Assignment Overseas

Because Klixon snap-acting controls have a date overseas to help blast the Axis, they're not available for the duration. But as soon as Victory is won, we'll be right back in production of Klixon gas valves and thermostats, ready to meet your requirements.

KLIXON

SPENCER THERMOSTAT CO.
Attleboro, Mass.

For a Complete GAS BURNER System
Select
The Mettler "FAN-AIR" Automatic
(Mechanical Draft) Assembly

Mettler Entrained Combustion Gas Burners
FOR ALL Purposes Kinds of gas Pressures
BUILT UNDER PATENTS:
JANUARY 25th, 1916
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SEMET-SOLVAY
ENGINEERING CORPORATION

Blue Gas Plants
Water Gas Machines
Washer Coolers
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Gas Purifiers
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Waste Heat Boilers
Producer Gas Plants

40 RECTOR STREET, NEW YORK, N. Y.

ABSTRACTS

Abstracts of new books, pamphlets, and articles published in current issues of the business publications serving the gas and allied industries.

Bureau of Mines: R. I. 3721—Aniline Points of Hydrocarbons—J. W. Ball.

Bureau of Mines: R. I. 3727—Inflamability of Methylene Chloride-Oxygen-Nitrogen Mixtures—G. W. Jones, R. E. Kennedy, and F. E. Scott.

Bureau of Mines: Natural Gas—G. R. Hopkins and H. Backus. Chapter (preprint) from Mineral Yearbook, 1942.

Preliminary Field Tests for Determining Required Injection Volumes and Pressure, and Plant Capacity—J. H. Cable. "Oil and Gas Journal," Nov. 11, 1943, pp. 199, etc. Gas injection: A proposed gas-injection project must necessarily include facilities for the injection of gas or air into the producing horizon. Designing suitable equipment requires a general knowledge of the installed producing facilities and an accurate evaluation of the volumes and pressures necessary for a successful and profitable venture. Preliminary field tests and the assembling of comprehensive data are necessary.

Modern Compressor Stations—B. C. Thiel. "Oil and Gas Journal," Nov. 4, 1943, pp. 27-31, 38. In this article the author gives a thumb-nail sketch of a modern compressor station. Each installation will of course have its own peculiar problems, but the points listed should be carefully studied and incorporated in any design if at all feasible.

An Aid in Locating Underground Piping—B. Miller. "Diesel Power," Nov. 1943, pp. 1047-1049. Construction and operation of device to improve sensitivity of dipping needle used to locate underground pipelines, valves, etc.

Measuring the Flow of Fluids—William Goodman. "Heating, Piping and Air Conditioning," Nov., 1943, pp. 596-598. Part 4. The accuracy of flow measurement depends entirely upon how accurate the flow coefficient K of the orifice is known. With methods presented in this article, the flow coefficient K can be found directly once the pressure drop across the orifice has been measured by means of a manometer. Furthermore, in this article all of the practical data needed to select and use orifices and manometers are given.

Nomograph of Dittus-Boelter Equation.—C. J. Ryant, Jr. "Industrial and Engineering Chemistry," Nov., 1943, pp. 1187, 1188. The equation for which the nomograph was constructed is useful in predicting the heat transfer coefficient of a substance in turbulent flow inside smooth pipe.

Dehydration of Saturated Well Gas in Subfreezing Weather—Neil Williams. "Oil and Gas Journal," Nov. 18, 1943, pp. 31, 32, 34. In areas where extreme cold temperatures are experienced, special precautions must be taken in producing low-pressure gas to eliminate all water vapor which might form hydrates and freeze in transmission lines. In this article typical practices of one producing company in Wyoming to dehydrate saturated gas are described.

Pressure Extension Chart for Orifice Meters—W. F. Martin. "Petroleum Engineer," Nov. 1943, pp. 63, 64. Chart designed for simple and rapid computation of measurement values.

Thermal Analysis of Liquified Gases—H. S. Booth and D. R. Martin. "Chemical Reviews," Oct., 1943, pp. 57-88. A critical survey of the field of thermal analysis of liquefied gases has been made. The field was limited to binary systems in which both components were gases under standard conditions. The methods used to establish mole fractions and to determine their freezing points were reviewed, and the procedure used in this investigation was analyzed for possible sources of error. Forty-five binary systems were found in the literature, and the salient facts about each system presented. The phase-rule diagrams of 44 of these systems were included. Errors in some of the work are obvious, and some of these systems should be reinvestigated. These errors were probably due to impurities in the components, or to inferior methods for temperature measurement.

Heat Exchange and Engine Cooling Systems. "Diesel Power," Nov., 1943, pp. 1037-1041. Part 2. This article discusses the latest developments in efficient cooling.

BASO

Thermo-Electric

AUTOMATIC PILOT

All Models Have These Features:

100% FLOW INTERRUPTION

permits safe lighting of pilot burner!

★

ONE-PIECE LEAD

flexible, yet rigid ...readily detachable

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SUITABLE FOR ANY FUEL GAS

A.G.A. & U.L. APPROVED

PATENT APPLIED FOR

MILWAUKEE GAS SPECIALTY CO.
MILWAUKEE 3, WISCONSIN

Washington Orders

Natural Gas (Directive 1, U-7): To husband supplies of natural gas in the Appalachian area, pending completion of a new pipeline from Texas to West Virginia, OWU has extended to March 31 its ban on deliveries to include industrial and commercial users having stand-by facilities capable of burning any type of fuel other than liquid petroleum gas, by an amendment of Directive 1, Order U-7. Previously, only those consumers with stand-by facilities for burning bunker oil were limited in their receipts of natural gas to amounts needed to supplement the power generated by their stand-by equipment.

Electric, Gas, Water, and Central Steam Utilities (U-1): Amended to simplify procedures, regulations, and record-keeping required of utilities in connection with the purchase and use of materials for maintenance, repair, operating supplies, and for making minor plant additions under wartime conditions. Principal changes:

1. The order has been rearranged and reworded for the purpose of clarification.

2. The quantitative restrictions on "withdrawals" of former paragraph (f) (3), and the controls on "acceptances of delivery" of former paragraph (f) (2) have been eliminated.

3. The limiting dollar value of $500 for overhead construction has been increased to $1500.

4. Utilities having a total inventory of $10,000 or less, excluding fuel and other materials specifically excluded from inventory by definition in paragraph (a) (11), are no longer subject to the restrictions on inventory and on the dollar value of material that may be purchased under the present order. Such utilities are, of course, subject to the other restrictions of the order; for example, those relating to the construction of lines to serve consumers, economy in the use of materials, sales from inventory and clearances of purchases of certain items through regional inventory control offices.

Water Heaters: Both new and used direct and indirect fired water heaters may now be sold to consumers for replacement and maintenance purposes without ratings, WPB announced Jan. 22. A purchaser need only certify to his dealer that such equipment is needed to replace equipment worn out, damaged beyond repair, or destroyed, and that it will not be used to replace usable equipment or to make a substitution that would provide more extensive facilities.

Provisions of Order L-185, water heaters, which limited sale of such equipment to orders rated A-10 or better, were revoked to bring that order into conformity with the provisions of order L-79, which now controls the sale of all plumbing, heating and cooking equipment.

Order P-84, which assigned a rating of AA-5 to purchase of water heaters by consumers for replacement and maintenance purposes, was revoked Jan. 15, 1944.

Sale of these heaters for other than replacement or maintenance purposes is still subject to WPB approval. Homeowners should apply for preference ratings on WPB Form 2631, while industrial and commercial users should apply on WBP Form 541.

Purchase of water heaters by sellers is now controlled by Order L-79, which assigns a rating of AA-3 to enable them to purchase and maintain an inventory of such equipment for new installations as well as for replacement purposes.

Furnaces: The monthly report of production, shipments, unfilled orders and estimated future production required of furnace manufacturers under the recently amended furnace order, L-22, should be filed by all furnace manufacturers whether they produce regularly or irregularly.

For example, if a manufacturer produces furnaces in January but does not produce subsequently, a report for January should be sent in and also one for February stating that no furnaces were produced during that month, and that production has been discontinued. If a manufacturer produces furnaces intermittently he is requested to report each month even though some months show no production.

Any furnace manufacturer who has not yet received a supply of Form WPB-3316, on which the monthly report is to be made, should request them from the Plumbing and Heating Division, WPB, Washington 25, D. C.

Home Construction: Private financial institutions filed with FHA applications during December for Title 6 mortgage insurance amounting to $59,548,100 to finance the construction of 13,103 proposed new family dwelling units for war workers. This compares with applications of $59,537,800 in November and $55,450,600 in December, 1942.

Steam Boilers: Scheduling jurisdiction over steam boilers of the type generally used as plumbing and heating equipment has been transferred from the Power Division of WPB to the Plumbing and Heating Division.

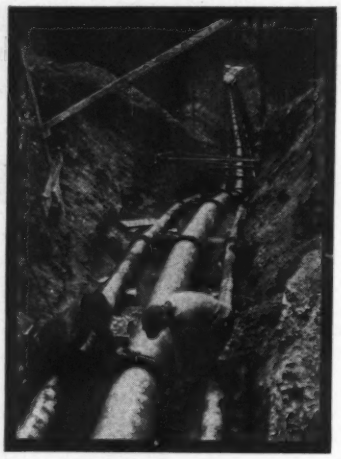
Coke: Ceiling prices on all by-products and retort gas coke produced in the East were raised 50c per net ton by OPA Jan. 22, to compensate for increases in labor and coal costs experienced during the last two years. The advances in prices are the first in Eastern territory since price control began in 1941.

Steel tubing: WPB has permitted resumption of manufacture of lightweight tubing, used largely by gas well operators in the eastern area.

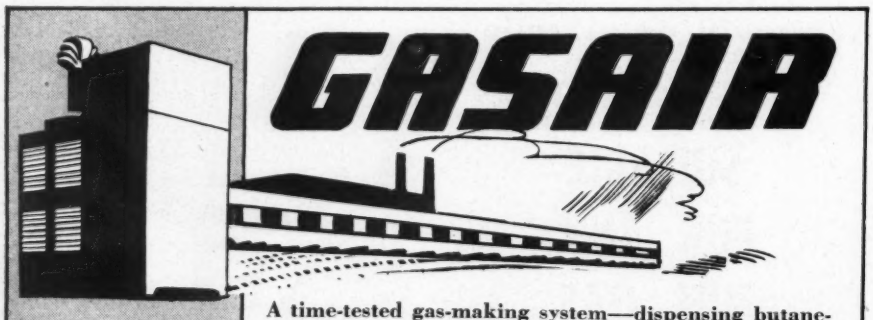
The Steel Tubing Industry Advisory Committee of WPB met Jan. 11 to examine current production problems. Reports indicated that the seamless industry is running at full capacity except for cuts in production in certain plants, chiefly cold drawn tubing plants, amounting to from 8 to 10% below the March-May peak. These losses are due to labor shortages, members of the committee said. W. Wiewel, government presiding officer.

AT WAR'S END

replace substitute pipe with time-tested Mono-Cast Centrifugal Pipe. Manufactured according to the recently adopted ASA Law of Design or other specifications.



American Cast Iron Pipe Company
BIRMINGHAM, ALABAMA
Sales offices in Principal Cities



A time-tested gas-making system—dispensing butane-propane and air mixtures under rigid b.t.u. control —for stand-by or permanent operation.

GASAIR CORPORATION 1072 BRYANT STREET SAN FRANCISCO, CALIF.

Heat Treating Equipment: The desirability of a uniform government policy for the disposal of the large stock of surplus government-owned heat treating furnaces was discussed at a meeting of this committee with WPB representatives. Value of surplus government-owned furnaces is estimated at 300 million dollars. Bradley Stoughton, government presiding officer.

Brass and Copper Tubing: WPB has prohibited the manufacture of new brass or copper tubing, pipe or fittings for installation in gas supply and gas distribution systems. These actions, effective Jan. 22, 1944, were taken by amending Conservation Order M-9-c.

Copper Tubing (CMP Regulation 9A): A method has been established by which copper tubing may be made available for use of repairmen in repairing refrigeration, gas and oil burner, and automotive equipment, through normal distribution channels. Directive No. 1 to CMP Regulatoin No. 9A, makes copper tubing available to established distributors for sale to persons engaged in the business of repairing refrigeration, oil and gas burner, and automotive equipment.

Cast iron boilers: Production of cast-iron boilers during 1944 equal to 100% of the number produced in 1940 was provided for Jan. 1 by WPB in an amendment to L-187. Under the revised order, the definition of cast-iron boilers includes boilers to provide heat for the interior of structures, for processing, or for domestic hot water supply.

Well Drilling: Petroleum Administrator Ickes Jan. 21 relaxed restrictions on the use of critical materials in drilling operations in the so-called "Cincinnati Arch-Nasheville Dome" area embracing certain counties in the States of Indiana, Ohio, Kentucky and Tennessee. The relaxation is covered by issuance of Supplementary Order No. 10 to Petroleum Administrative Order No. 11.

Under the terms of the new supplementary order, operators are authorized to drill or deepen wells in the areas specified on five-acre spacing to a depth not greater than 1200 ft. and on 10-acre spacing to depths not exceeding 1800 ft.

Cooper-Bessemer New Film on Engine Production History

The Cooper-Bessemer Corp. has just released a new industrial film tracing the development of its 110 years of engine production. The film takes the viewer on a personally conducted tour of Cooper-Bessemer's two plants, covering practically every department and operation involved in the design, construction and performance of the large internal combustion engines which are the company's principal products. It also emphasizes the extreme importance of Diesel and gas engines, electrical generating sets, and compressors for industrial and marine purposes.

The film is now being scheduled for extensive showings throughout the country so that government officials, engineers, and students may obtain a better understanding and knowledge of the Cooper-Bessemer company, its policy, facilities, and the application of its engines for the various power requirements for which they were designed.

Production Awards

• **Lattimer-Stevens Co.,** Columbus, Ohio, was awarded the Army-Navy "E" for excellence in war production on Jan. 3, 1944. The company has been engaged in the manufacture of Army Ordnance since before Pearl Harbor, and has been making supplies for the gas utility industry (meter connections, stop cocks, etc.) since 1909.

• A second gold star has been added to the **Homestead Valve Manufacturing Co.** Maritime "M" Pennant, for production of valves for Liberty ships.

• **Cribben & Sexton Co.,** manufacturer of Universal Gas Ranges, Chicago, was awarded the Army-Navy "E" for excellence in war production, at ceremonies at the Universal factory on Jan. 3, 1944.

During World War I, Cribben & Sexton Co. was engaged in the production of 155-mm. shells. In the present war, it has produced tank armor plate, ammunition boxes, and army hospital tables; and is currently engaged in the manufacture of high explosive shells and in making airplane sub-assemblies.

Gas is Ammunition

don't waste it

save gas with Carboseal Anti-Leak

YOU can prevent the loss of a vital war material — gas — by using CARBOSEAL Anti-Leak to stop the leaks in the bell-and-spigot joints of dry-gas systems. CARBOSEAL Anti-Leak is a liquid that penetrates the cells of the hemp and jute fibres in the joint packing and causes them to swell approximately 44 per cent in volume, thereby sealing leaks.

CARBOSEAL Anti-Leak is especially recommended now as a gas-saver because . . . only a small crew is needed to apply it . . . critical materials are not needed . . . the cost of the treatment is low, averaging about 50 cents per joint . . . and excavation and repaving are practically eliminated.

CARBOSEAL Anti-Leak works. Reports show that joints in mains treated seven years ago are still tight. The Table of Leakage Reduction, compiled from hundreds of test results on file, indicates results typical of general field experience.

Over 250 gas companies now use CARBOSEAL Anti-Leak in their routine maintenance programs.

For further information on the uses of the Anti-Leak and methods for applying it, write for the book, "Correcting Leakage in Gas Distribution Systems with CARBOSEAL Anti-Leak."

TABLE OF LEAKAGE REDUCTION

Diameter of Main—Inches	Length of Main—Feet	Percentage Leak Reduction
8	620	100
6	582	95
6	92	100
4	1,200	100
4	1,700	91
3	618	100
3 equiv.	43,800	60

CARBIDE AND CARBON CHEMICALS CORPORATION

Unit of Union Carbide and Carbon Corporation

30 East 42nd Street UCC New York, N. Y.

The word "Carboseal" is a registered trade-mark of Carbide and Carbon Chemicals Corporation.

PRODUCERS OF SYNTHETIC ORGANIC CHEMICALS

LABORATORY ENGINEER WANTED

The Rheem Manufacturing Company wishes to contact a Laboratory Engineer with background in Gas Appliance Industry, knowledge of American Gas Association Standards, familiar with testing of gas appliances, running combustion tests, flue gas analyses, etc. College education preferred with major in Heat Engineering, Chemical Engineering or Physics.

Write details of background and salary desired to

RHEEM MANUFACTURING COMPANY
1206 Maple Avenue
Los Angeles 15, California,
Attention Personnel Director

FOR SALE

2 ROOTS-CONNERSVILLE GAS EXHAUSTERS

Size No. 8, Two Impellor Type, Side Intake and Discharge In Serviceable Condition.

Capacity—127,000 cubic feet per hour; Pressure—28" of water column; Power—125 lb. steam; Drive—Direct connected; Prime Mover—Single cylinder vertical steam engine for 125 lb. steam pressure; Speed—Variable; Size of Intake—16"; Size of Discharge—16"; Service—To exhaust .5 gravity foul gas from relief holder; Overall Dimensions—6' x 14' in Plan x 6' high; Bed Plate—Cast iron under exhauster and engine.

If you are interested, write us for price and other details

SEATTLE GAS COMPANY
1511 FOURTH AVE., SEATTLE, WASH.

SINCE 1897
BEST IN BRASS

K-CO

GROUND KEY Gas & Steam Valves

TEMPERATURE and PRESSURE Relief Valves

GAS SHUT-OFF Valves

A wholly owned subsidiary of WELSBACH ENGINEERING AND MANAGEMENT CORPORATION.

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KITSON COMPANY
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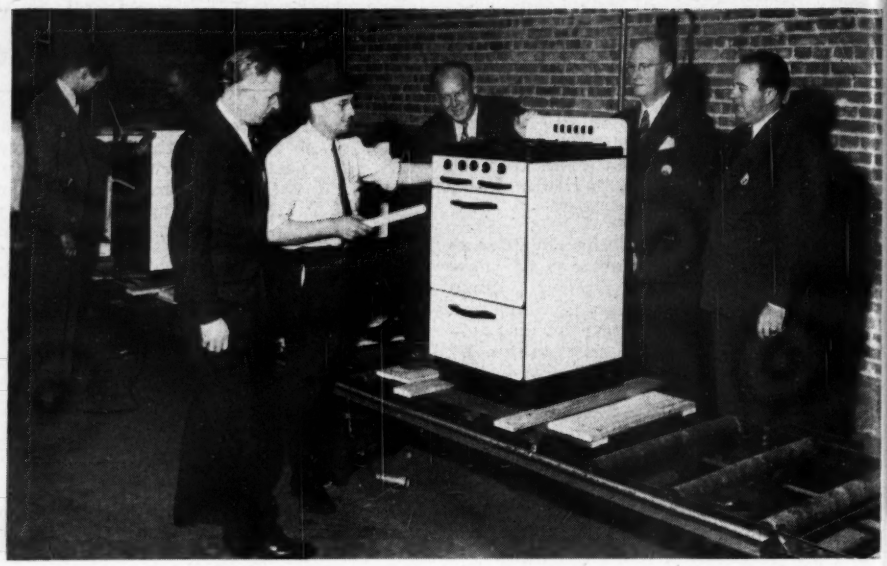

The appearance of the first war-model Roper Gas Range (illustrated above) marks the beginning of a production program designed to manufacture ranges in numbers consistent with government desires to (1) help solve the problem of critical range shortages; (2) make a good war model available to housewives badly in need of cooking equipment; and (3) aid gas companies and dealers by providing "something to sell." Inspecting the new range are, left to right: Charles Kane, Otto Olson, works manager and vice president; Vollie Kinery, E. Carl Sorby, vice president; Floyd K. Lawson, executive vice president; and George W. Baldwin, sales manager.

Twin State Sale Approved By Public Service Commission

The New Hampshire Public Service Commission has approved the sale of the Twin State Gas & Electric Co., with assets of $8,000,000, to the Public Service Co. of New Hampshire and the Central Vermont Public Service Corp. Approval had previously been granted by the Vermont Public Service Commission and the Securities and Exchange Commission. According to the commission order, all New Hampshire holdings of the Twin State company (about 50% of the company's properties) will be transferred to Public Service; the remainder, located in Vermont, will be purchased by the Central Vermont corporation.

Announce Sale of Indiana-Kentucky Gas to Ohio Valley

According to an announcement by W. E. Hiatt, secretary-treasurer of Ohio Valley Gas Corp., that company has bought the interest of Indiana-Kentucky Natural Gas Corp. The new company, R. Hal Compton of Owensboro, Ky., president, and W. C. Lyklema of Chicago, Ill., vice president, will maintain its main office in Tell City, Ind. It will serve Tell City, Troy and Riley; and farmers between Evansville and Terre Haute who live off the main line between those cities, which is operated by Kentucky Natural Gas Corp.

Oklahoma Rate Reductions

The Oklahoma Corporation Commission has approved gas rate reductions, retroactive to Sept. 1, applying to eight cities served by Gas Service Co., in Oklahoma, a subsidiary of Cities Service Gas Co. The Oklahoma reductions will become effective only if the federal courts uphold a general rate cut ordered by the Federal Power Commission.

Cities in Oklahoma served by Gas Service Co., are: Bartlesville, Miami, Nowata, Dewey, Delaware, Pawhuska, Barnsdall and Fairmount. Funds being collected above the old rate are being impounded pending outcome of the litigation, Ray O. Weems, vice chairman of the Commission, said.

Company Plane Saves Time for Cooper-Bessemer Officials

Officials of the Cooper-Bessemer Corp. have acquired a five-passenger airplane which enables members of their executive staff to traverse the 160 miles between their plant at Mount Vernon, Ohio, and that at Grove City, Pa., in about one hour instead of the five or six required by motor or railroad service. It is expected that plane will save a great deal of valuable time in emergency trips to the company's branch offices throughout the country, thus contributing to increased efficiency in their war production program.

500,000 cu. ft. of Gas Used Daily by New Plant

A new $150,000 onion and garlic dehydration plant using some 500,000 cu. ft. of gas daily has been constructed in Oxnard, Calif. According to C. L. Ferry, industrial sales engineer, Southern Counties Gas Co., 3700 ft. of 4-in. main was installed at a cost of $8000 to tie the new plant in with the company's distribution system. E. C. Fogal, owner of the plant, also operates an extensive dehydration system in Orange County between Santa Ana and Huntington Beach, Calif., where gas is used exclusively as fuel.